3.2.1 Institution has created an ecosystem for innovations and has initiatives for creation and transfer of knowledge (patents filed, published, incubation center facilities in the HEI to be considered) (10)-REPORT (500 WORDS)

Exploration and reflection are crucial for any teacher to be effective in one's job. Quality research outcome is beneficial for the discipline, society, industry, region and the nation. Sharing of knowledge especially theoretical and practical findings of research through various media enhances quality of teaching and learning. Research acumen in an institution is an evolving feature reflecting various research output with clear records such as - doctoral, post-doctoral, projects, inventions and discoveries, number of patents obtained and number of research publications.

Details of patents published by the faculty members:

- Dr. Murugananth Gopal Raj." Embedded Real-Time Finger-Vein Detection Based Advanced Security System" 04-09-2020- 202041035424 A Published.
- Dr. Murugananth Gopal Raj." A Rule based Rootkit Detection Method using Machine Learning in Embedded IoT Devices" 30-09-2020- 2020102099 Published.
- Dr. Murugananth Gopal Raj." IoT based Smart Device for Pollution Control and Traffic Management System" 26-02-2021- 202041056676 A Published.
- Dr. Murugananth Gopal Raj." UAV's for Disaster Identification and Alert System" 02-04-2021- 202141012121 A Published.
- Dr. Murugananth Gopal Raj." Artificial Intelligence Based No-Ball Detection in the Cricket Field" 10-12-2021- 202141053537 A Published.
- Dr. Murugananth Gopal Raj." An IoT Based Face Mask Vending Machine" 14-01-2022- 202121054459 A Published.
- Dr. Murugananth Gopal Raj." Headlamp Beam Shifting Apparatus and a method to operate the same" 06-04-2018- 2.01841E+11 **Under Examination**.
- Dr. Murugananth Gopal Raj." Vehicle Identification Device with wireless communication system and a method thereof " 23-02-2018 - 2.01841E+11 **Under Examination.**
- Dr. R Sivakumar "Self Navigated Smart Dustbin and a method for operating the same" 11-02-2022- 20224 1005767 A Published.
- Dr.S.Gunasekaran , Dr.V.Balamurugan " Geospatial Technology in Precision Agriculture using IoT" 10-09-2021- 202141038829 A Published.
- Dr. John Alexis S , " Method and System for Remotely Adjusting Height and Angle of a Wall Mounted Television Fixer" 30-3 - 201741012456 Published.

I Claim,

1. A vehicle identification device with wireless communication system (101) **characterized in that,** comprises:

a visible light communication unit (111), wherein the visible light communication unit (111) comprises:

a vehicle controlling unit (112), which includes a microcontroller (115) and user interface (113); and

a data transmitting means (116), which includes a lamp driver (117), and LED lamp (118); and

a data receiving and processing means (121) which comprises:

a photo detector (122); and

a user interface device (124); and

a cloud storage (131);

wherein an authorized person, in a vehicle checking area, enables a data transfer enquiry mode at the user interface device (124) which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115), wherein when a user touches an icon on the user interface (113) that enables transmission of the data signal from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116) and data receiving and processing means (121).

2. The vehicle identification device as claimed in claim 1, characterized in that, the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if all information into the data signal are correct, the person allows the vehicle to move.
3. The vehicle identification device as claimed in claim 1, characterized in that the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if the information into the data signal is incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine.

4. The vehicle identification device as claimed in claim 2, characterized in that the information into the data signal comprises such as registration certificate, insurance and pollution certificate.
5. A method for authentication of vehicle data using wireless communication system (101), **characterized in that** the method comprises the steps of:

- enabling a data transfer enquiry mode at main user interface device (124) by an authorized person, and a radio frequency signal from said user interface device (124) is transmitted to a vehicle's main server (131) through wireless communication;

- receiving at the vehicle main server (131) the radio frequency signal from the User Interface (124) of authorized person, wherein the signal is processed by a vehicle microcontroller (115);

- transmitting the signal from vehicle microcontroller (115) to a vehicle user interface device (113); and

- transmitting a data signal, when a user touches an icon on the user interface device (113), from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116), wherein

the data signal from microcontroller (115) is converted and encoded into binary data using a lamp driver (117), and the encodes binary data send to a LED lamp (118), wherein said LED lamp (118) transmits the binary data information to the User interface device (124) through visible light such as photons.

6. The method for authentication of vehicle data as claimed in claim 5, characterized in that receiving the visible light at a receiving and processing means (121) that has a photo detector (122), wherein the received data is amplified and processed by an amplification and processing means (123) which is then displayed at the authorized person's user interface device(124).
7. The method for authentication of vehicle data as claimed in claim 5, characterized in that the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are correct, the person allows the vehicle to move.

8. The method for authentication of vehicle data as claimed in claim 5, characterized in that the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine.
9. The method for authentication of vehicle data as claimed in claim 5, characterized in that information into the data comprises such as registration certificate, insurance and pollution certificate.

Dated this 10th day of April 2020.

GOPALRAJ MURUGANANTH
(APPLICANT)

FORM 3

THE PATENTS ACT 1970

(39 of 1970)

&

The Patents rules, 2003

STATEMENT AND UNDERTAKING UNDER SECTION 8

(See section 8, Rule 12)

Name of Applicant

I, **GOPALRAJ,Murugananth**

hereby declare:

(i) That we, who have made this application No. **201841006184** Dated **19/02/2018,** have not made any application for the same/substantially the same invention outside the India.

Name of the country	Date of application	Application No.	Status of the application	Date of publication	Date of grant
NA	NA	NA	NA	NA	NA

(iii) That we undertake that upto the date of grant of the patent, by the controller, we would keep him informed in writing the details regarding corresponding applications for patents filed outside India within three months from the date of filing of such application.

Dated this 10th day of April 2020.

GOPALRAJ MURUGANANTH
(APPLICANT)

To,

The controller of Patents,
The Patent Office, At Chennai, India.

INTELLECTUAL PROPERTY INDIA
एकस्व/PATENTS|अभिकल्प/DESIGNS|
व्यापार चिह्न/TRADE MARKS|भौगोलिक
उपदर्शन/GEOGRAPHICAL INDICATIONS

सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA

एकस्व कार्यालय / THE PATENT OFFICE
बौद्धिक सम्पदा भवन / I.P.O. BUILDING
जी.एस.टी.रोड, गिंडी/ G.S.T.Road, Guindy,
चेन्नई/ Chennai- 600032
दूरभाष/ Tel. No. : (091)(044)22502081-84
फ़ैक्स/ Fax: 044 22502066

Email/ई मेल : Chennai-patent@nic.in
वेबसाइट /Website:http://ipindia.nic.in

सं.संख्या/Ref.No /आवेदन संख्या/Application No/ 201841006184 दिनांक/Date of Dispatch/Email: 20/02/2020

सेवा मे,/To
Dr.G.MUGUGANANTH,
Dr.G.MUGUGANANTH, 23 / 3, HARI CHANDRA STREET, POLLACHI, TAMIL NADU, INDIA. - 642001
gmuruganantth@gmail.com
Email : gmuruganantth@gmail.com

विषय: एकस्व अधिनियम, 1970 की धारा 12 व 13 तथा एकस्व नियम, 2003 के अधीन परीक्षण रिपोर्ट
Subject: Examination report under sections 12 & 13 of the Patents Act, 1970 and the Patents Rules, 2003.

1. उपर्युक्त आवेदन के संदर्भ मे परीक्षण रिपोर्ट (अर्थात, एकस्व नियम, 2003 (यथा संशोधित) के नियम 24-ख(3) में विनिर्दिष्ट आपत्तियों का प्रथम कथन) इसके साथ संलग्न है। यह रिपोर्ट परीक्षण हेतु अनुरोध दिनांक 19/02/2018 के उत्तर मे जारी की गयी है। परीक्षण रिपोर्ट का उत्तर दाखिल करने की अंतिम तिथि (अर्थात, इस रिपोर्ट में लगाई गयी सभी आवश्यकताओं के अनुपालन की अवधि) आवेदक को आपत्तियों का प्रथम कथन जारी होने की तिथि से छः माह है।
   Please find enclosed herewith an Examination Report (i.e. a first statement of objections as specified in Rule 24-B(3) of The Patents Rules, 2003 (as amended)) in respect of above-mentioned application. This report is issued with reference to a request for examination dated 19/02/2018.The last date for filing a response to the Examination Report (i.e. a period to comply with all the requirements raised in this examination report) is six months from the date on which the first statement of objections is issued to the Applicant.

2. यदि रिपोर्ट के अंतर्गत लगाई गयी आवश्यकताओं का अनुपालन एकस्व नियम, 2003 (यथा संशोधित) के नियम 24 ख(5) में विनिर्दिष्ट अवधि के भीतर अंदर अनुपालन नहीं किया गया तो एकस्व अधिनियम 1970 की धारा 21(1) के अधीन वर्तमान आवेदन को परित्यक्त माना जाएगा।
   The instant application shall be deemed to have been abandoned under Section 21(1) of The Patents Act, 1970, unless all the requirements raised in this report are complied with in the period as specified in Rule 24-B (5) of The Patents Rules, 2003 (as amended).

3. आपका ध्यान एकस्व नियम, 2003 के नियम 24 ख(6) के प्रावधानों की ओर भी आमंत्रित किया जाता है।
   Your attention is also invited to the provisions of Rule 24-B (6) of the Patents Rules 2003.

4. आपको सलाह दी जाती है कि शीघ्र निपटान हेतु अपना उत्तर शीघ्र प्रस्तुत करें।
   You are advised to file the reply at the earliest for early disposal.

Shrikant Bagde
नियंत्रक पेटेंट/ Controller of Patents

संलग्न/Enclosed: अपरोक्त अनुसार/As above

टिप्पणी: यह इलेक्ट्रोनिक रूप से उत्पन्न रिपोर्ट है।
NOTE: This is an electronically generated report.

सभी पत्राचार नियंत्रक एकस्व को उपरोल्लिखित पते पर भेजा जाये।
All communications should be sent to the Controller of Patents at the above mentioned address.

THE PATENT OFFICE

परीक्षण रिपोर्ट /Examination Report

आवेदन संख्या /Application Number	201841006184
दाखिल करने की तिथि /Date of Filing	19/02/2018
पूर्विक्ता दिनांक /Date of Priority	--
पीसीटी अंतर्राष्ट्रीय आवेदन की संख्या व दिनांक / PCT International Application No. & Date	--
आवेदक /Applicant	GOPALRAJ,Murugananth
परीक्षण हेतु अनुरोध की संख्या व दिनांक /Request for Examination No. & Date	R20184005174 19/02/2018
प्रकाशन की तिथि /Date of Publication	23/02/2018

इस परीक्षण रिपोर्ट के चार भाग हैं, अर्थात रिपोर्ट का सारांश, विस्तृत तकनीकी रिपोर्ट, औपचारिक आवश्यकताएँ तथा रिकॉर्ड मे दस्तावेज़ /
This examination report consists of four parts, namely summary of the report, detailed technical report, formal requirements and documents on record.

भाग -1: रिपोर्ट का सारांश
PART-I: SUMMARY OF THE REPORT

क्र. सं. /Sl. No.	अधिनियम के तहत आवश्यकताओं पर विस्तृत टिप्पणियां /Requirements under the Act		दावों की संख्या /Claim Numbers	टिप्पणी /Remarks
1.	धारा 2(1)(ज) के तहत आविष्कार /Invention u/s 2(1)(j)	नवीनता /Novelty	दावे /Claims: 1-9	हाँ /Yes
			दावे /Claims:	नहीं /No
		आविष्कारी कदम / Inventive step	दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-9	नहीं /No
		औद्योगिक उपयोगिता /Industrial Applicability	दावे /Claims: 1-9	हाँ /Yes
			दावे /Claims:	नहीं /No
2.	धारा 3 के अधीन पेटेंट-अयोग्यता (यदि हाँ, खंड 3(क-त) /Non-patentability u/s 3 (if yes, specify section3(a-p))		दावे /Claims: 5-9	हाँ /Yes m
			दावे /Claims:	नहीं /No
3.	[धारा 10(5) व 10(4) (ग)] के अधीन दावे /Claims [u/s 10(5) & 10(4) (c)]	स्पष्टता/ संक्षिप्तता /Clarity / Conciseness	दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-4,7-9	नहीं /No

भाग –II विस्तृत तकनीकी रिपोर्ट
PART-II: DETAILED TECHNICAL REPORT

क. उद्धरित दस्तावेजों की सूची /A.List of documents cited:

(क) पेटेंट साहित्य / (a). Patent Literature :

क्र. सं. / Sl.no	दस्तावेज़ों का विवरण /Details of documents	प्रकाशन तिथि(दिन/माह/वर्ष) / Publication date	उद्धरित दस्तावेज़ का प्रासंगिक विवरण (पृष्ठ व अनुच्छेद संख्या) / Relevant description (page and paragraph no.) of cited document	उद्धरित दस्तावेज़ के प्रासंगिक दावे / Relevant claims of cited document	अभिकथित आविष्कार के दावे /Claims of alleged invention
1	D1: US20150074008A1	12/03/2015	Abstract, paragraphs 0017,0031-0033,0044,0055-0057,0071-0074	1-19	1-9

2	D2: US9413457B2	09/08/2016	Abstract and description	1-32	1-9

(ख) गैर-पेटेंट साहित्य /(b).Non-patent literature

कोई दस्तावेज़ उद्धृत नहीं है /No Document Cited

ख. अधिनियम के तहत आवश्यकताओं पर विस्तृत टिप्पणियां /B. Detailed observations on the requirements under the Act:

(1).आविष्कारी कदम / INVENTIVE STEP:

(I) ऊपर उद्धरित दस्तावेज़(जों) के संदर्भ मे स्पष्ट अध्यापन(नों) को ध्यान मे रखते हुए, निम्नलिखित कारणों से दावा(वों) (1-9) मे आविष्कारी कदम की कमी है
Claim(s) (1-9) lack(s) inventive step, being obvious in view of teaching (s) of cited document(s) above under reference for the following reasons:

The subject matter as claimed in claims 1-9 lack inventive step in view of documents D1 and D2.

D1 discloses the subject matter of method claim 5:

The method of working of Vehicle identification device with wireless communication system (101) [see para. 0056, 0057] comprises the method such as;

the data transfer enquiry mode is enabled at main user interface device by the authorized person and the signal from said user interface device is transmitted to vehicle's main server through wireless communication [see para. 0017, 0031, 0032];

Vehicle main server receives the radio frequency signal from the User Interface of authorized person and the signal is processed by vehicle microcontroller (115) [see para. 0033] ;

The signal from vehicle microcontroller (115) is transmitted to vehicle user interface device (113) and enables the touch icon in the touch screen display to send the vehicular information [see para. 0071-0074];

when the user touches the icon enabled in the screen for transmitting data from vehicle to authorized person, the microcontroller (115) sends the vehicle data to lamp driver (117) [see para 0071];

Characterized in that, the electrical signal from controller is converted into binary data in the lamp driver (117) and encodes binary data to LED lamp (118) wherein said LED lamp transmits the binary data information to the Receiver User interface (124) through visible light such as photons [see para. 0044].

D1 is not capable to disclose about the other features such as electrical signal from controller is converted into binary data in the lamp driver (117) and encodes binary data to LED lamp (118) wherein said LED lamp transmits the binary data information to the Receiver User interface (124) through visible light such as photons . But this feature disclosed by D2 [see abstract, para.0112-0118, 0157].

Combination of D1 and D2 also discloses the other independent claim 1, which are describing about the apparatus to perform the same features. So the same reasoning applies for these claims for lack of inventive step.

Other dependent claims 2-4, 6-9 do not appear to contain any features which, in combination with the features of any claim to which they refer meet the criteria of inventive step with respect to D1 and D2.

Hence all main features of instant application are disclosed in documents D1 and D2.If teaching of D1 and D2 are used, a person skilled in the art, without being inventive would readily arrive at the subject matter of claims (all). Therefore these claims lack inventive step under section 2(1) (ja) of, The Patents Act, 1970. Therefore

instant application does not constitute an invention under section 2(1) (j) of, The Patents Act, 1970.

(2).पेटेंट अयोग्यता /NON PATENTABILITY:

(I) निम्नलिखित कारणों से धारा 3 के खंड (m)के प्रावधान के तहत दावा(वे) (5-9) सांविधिक रूप से पेटेंट योग्य नहीं हैं /
Claim(s) (5-9) are statutorily non-patentable under the provision of clause (m) of Section 3 for the following reasons:

Claims 5-9 recite various method steps without disclosing what apparatus/structural component carried out said steps. In absence any structural limitations, subject matter of these claims is mere scheme and/or mental act and hence falls within scope of clause (m) of section (3) of the Patents Act, 1970 (as amended). Therefore invention claimed in said claims is not patent-able.

(3).प्रकटन की दक्षता /SUFFICIENCY OF DISCLOSURE:

(4).स्पष्टता एवं संक्षिप्तता /CLARITY AND CONCISENESS:

(I) दावा(वे) 1-4,7-9 के संबंध मे स्पष्ट रूप से परीभाषित नहीं हैं.
Claim(s) 1-4,7-9 are not clearly worded in respect of:

Claims 1-4,7-9 recite various means. These claims are not clear in respect of structural features of the said means. Also these claims are not supported by the description. In absence of such structural features the claims are indefinite and do not satisfy the requirement of section 10(4) (c) of the Act.

(5).अन्य आवश्यकताएँ /OTHERS REQUIREMENTS:

(I)

1. Care should be taken in reply of FER , if there is any amendment it should be done U/s 59 and mark-up copy also submitted along with amendment. Proper reason shall be provided regarding amendment.
2. Please note that this Examination is done on the basis of electronically uploaded documents in the e-module only. You may verify all documents as filed are uploaded electronically or not, and bring to the notice of the concerned discrepancies if any.

भाग – III: औपचारिक आवश्यकताएँ /PART-III: FORMAL REQUIREMENTS

आपत्तियां /Objections	टिप्पणी /Remarks
Statement & Under Taking (Form 3 Details)	1. Details regarding application for Patents which may be filed outside India from time to time for the same or substantially the same invention should be furnished within Six months from the date of filing of the said application under clause(b) of sub section(1) of section 8 and rule 12(1) of Indian Patent Act. 2. Details regarding the search and/or examination report including claims of the application allowed, as referred to in Rule 12(3) of the Patent Rule, 2003, in respect of same or substantially the same invention filed in all the major Patent offices along with appropriate translation where applicable, should be submitted within a period of Six months from the date of receipt of this communication as provided under section 8(2) of

	the Indian Patents Act.

भाग-IV: रिकॉर्ड मे दस्तावेज़ /PART-IV: DOCUMENTS ON RECORD

निम्नलिखित दस्तावेज़ों के आधार पर यह परीक्षण रिपोर्ट तैयार की गयी है
The examination report has been prepared based on the following documents:

कार्यसूची तिथि / Docket Date	कार्यसूची संख्या /Docket Number	पूर्विष्टि संख्या विवरण /Entry Number Description
19 Feb 2018	11277	1-New Application For Patent With Provisional /Complete Specification
19 Feb 2018	11277	OTHERS(NON CASH)
19 Feb 2018	11277	2-Complete After Provisional Specification - Form 2 Check For No. OF Pages & Claims
19 Feb 2018	11277	3-Statement & Undertaking - Form 3
19 Feb 2018	11277	12-Request For Early Publication - Form 9
19 Feb 2018	11277	28(i)-Request For Examination After 18 months Publication - Form 18

नियंत्रक का नाम /Name of the Controller: Shrikant Bagde

नियंत्रक स्थान /Controller Location: Mumbai

टिप्पणी: परीक्षण रिपोर्ट का उत्तर दाखिल करने की अंतिम तिथि / Note: Last date for filing response to the Examination Report: 20/08/2020

The Controller of Patents

The Patent Office

Mumbai

KIND ATTN: SHRIKANT BAGDE

CONTROLLER OF PATENTS

Dear Sir,

Re: Patent Application No**. 201841006184** Filed on: **19/02/2018**

Applicant: **GOPALRAJ, Murugananth**

Title: **VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF**

Letter No: **Ref. No/Application No/201841006184** Dated**: 20/02/2020**

This is in reference to the examination report dated **20/02/2020** against Indian Patent Application **201841006184**, referred hereafter as present application/invention.

AMENDMENTS MADE IN CLAIMS

1. In view of the objections related to Paragraphs (1), (2), (4), and (5) put forth in the examination report, however, without admitting to the propriety of the objection/objections, the Applicant respectfully submits that the pending claims (on file) have been suitably amended to make them clear, concise, and also submits the revised claims in the prescribed manner which are now in condition of allowance. Revisions in claims are as under:

i) Original independent claim 1 on file is amended by way of incorporating the limitations from Fig 2, and Page 9-11 of original specification on file, to make the claim clear, concise, definitive, and clearly define the invention.

Support for the amendments can be traced back to Fig 2, and Page 9-11 of specification on file.

ii) Original dependent claims 2-4 on file are amended by way of incorporating the limitations to make the claim clear, concise, definitive, and clearly define the invention.

iii) Original independent claim 5 on file is amended by way of incorporating the limitations from Fig 2, and Page 9-11 of original specification on file, to make the claim clear, concise, definitive, and clearly define the invention.

iv) Original dependent claims 6-9 on file are amended by way of incorporating the limitations to make the claim clear, concise, definitive, and clearly define the invention.

v) Preamble of the claims are amended to clearly define the scope of the invention.

vi) Claims are amended to provide proper antecedent bases, and make them clear, concise and definitive.

vii) Claims have been amended to provide reference numerals to enhance intelligibility of the claims.

2. Applicant submits that no new matter has been added to any of the pending claims.

3. It is submitted that all the amendments to the claims are directly and unambiguously derivable from the application as originally filed, and therefore meet the requirements of The Patents Act, 1970.

4. In order to facilitate review of the amendments a compared version of the amended set of claims 1-9 having the amendments compared to the original version of claims 1-9 are enclosed along with this response. Marked up as well as clean copies of the amended claims are enclosed to this response.

5. All amendments are made without prejudice or disclaimer of subject matter that has been deleted at this stage. The Applicant reserves the right to reintroduce any deleted matter in this application or in a subsequent divisional application.

RESPONSE TO OBJECTIONS

PARAGRAPH (1)-INVENTIVE STEP:

6. With regards to objection pertaining to Inventive Step on claims 1-10 in view of:

D1: US20150074008A1. &

D2: US9413457B2

Applicant respectfully disagrees that the invention lacks Inventive Step, and is not allowable u/s 2(1)(j) of the Patent Act, 1970. The Applicant respectfully traverses these grounds of objections as teachings of the referred patent documents are entirely different from this invention. Presented below are arguments in support of Inventive Step of the present invention.

In order to expedite prosecution of this case and without admitting to the propriety of the objections, the Applicant has amended independent claims on file, to make the claims clear, concise and clarify the scope of claimed invention. Applicant requests the Controller to kindly consider the amended set of claims presented in the instant response, wherein earlier independent claims have been amended to make it clear and concise. Presented below are arguments in support of Inventive Step of the present invention.

The independent claims on file after the amendments are now read as follows:

AMENDED INDEPENDENT CLAIM 1:

1. A vehicle identification device with wireless communication system (101) **characterized in that,** comprises:

a visible light communication unit (111), wherein the visible light communication unit (111) comprises:

a vehicle controlling unit (112), which includes a microcontroller (115) and user interface (113); and

a data transmitting means (116), which includes a lamp driver (117), and LED lamp (118); and

a data receiving and processing means (121) which comprises:

a photo detector (122); and

a user interface device (124); and

a cloud storage (131);

wherein **an authorized person, in a vehicle checking area, enables a data transfer enquiry mode at the user interface device (124) which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115), wherein when a user touches an icon on the user interface (113) that enables transmission of the data signal from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116) and data receiving and processing means (121). (Emphasis Added)**

At the outset, Applicant humbly and respectfully submits that the cited prior-art references D1 & D2, either alone or in combination, **fail** to disclose at least the below features of the amended independent claim 1 of the present invention:

- **an authorized person, in a vehicle checking area, enables a data transfer enquiry mode at the user interface device (124) which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115), wherein when a user touches an icon on the user interface (113) that enables transmission of the data signal from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116) and data receiving and processing means (121). (Emphasis Added)**

The present invention provides improved technical solution which discloses **a novel system for vehicle identification, wherein an authorized person, who checks a vehicle in a vehicle checking area, enables the data transfer enquiry mode at a user interface device (124), that he carries. A signal from the user interface device (124) is transmitted to vehicle the server through wireless communication. Vehicle server receives the radio frequency signal from authorized person that signal is processed by vehicle microcontroller.** The signal from vehicle microcontroller is transmitted to vehicle user interface device touch screen display (113). It enables the touch icon to send the vehicular information. The user touches the icon enabled in the screen for transmitting data from vehicle to authorized person. The microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted into binary data in a lamp driver. The driver encodes binary data to LED lamp. Said the LED lamp gets energized and

starts glowing, the binary data information is transmitted through visible light such as photons.

With regard to the cited document D1 & D2,

1. As per FER, the Examiner has cited that "*The subject matter as claimed in claims 1-9 lack inventive step in view of documents D1 and D2*".

With regard to the cited document D1

Applicant want to assert that, in para [0017], [0031] and [0032], the D1 discloses that:

According to Para [0017] of D1

"In a third embodiment of the invention, there is provided another client device for secure authentication processes. The client device can include a processor and a computer-readable medium, having stored thereon a plurality of instructions for causing the processor to perform a method. The method can include receiving, from a other client device associated with a first party to a transaction, a machine readable pattern representing one or more items available for transfer and identity information of the first party. The method can also include transmitting a message to a second server associated with a second party to the transaction, where the message is based on an interpretation of the machine readable pattern, and the message including the identity associated with the machine readable code and a request for transfer of at least a portion of the items specified in the machine readable code from a first server associated with the first party to the second server. The method can further include, subsequent to the transmitting, receiving, from the second server, an indication of a completion of the processing of the identity and the request via an authentication process between the first server and a second server and that items were are transferred between the first server and the second server."

According to Para [0031] of D1

"In operation, the device A would provide a request J to perform the transfer I of credits, or other information, from server G based on input of an operator

associated with the credits or information at server G. Thereafter, the credits are allocated from an account in server G to C or the information is transferred from server G to C. For security purposes, the request J and the transfer I can be encrypted. These communications can also contain identity authorization information indicating that device A is an authorized proxy of its operator. Thus, identity is established."

According to Para [0032] of D1

"In the embodiment shown in FIG. 1, upon initiating a transaction, the machine readable code B is generated at device A and made available or transferred F to a computing device of a second party to the transaction, device D. For example, as shown in FIG. 1, the machine readable medium B is provided in the form of a barcode and is read by a camera E in at device D to transfer the machine readable code to device D. The machine readable code can contain the identity authorization information and address of a second server H. The address could be fixed, or it could be simply entered or stored as a variable in E. The net result is that D emits or transmits a status K to server H that the credits or information represented by the read operation F have been successfully or unsuccessfully received at E."

Based on the above, the Applicant asserts that D1 elaborates device "A" that would provide a request J to perform the transfer I of credits, or other information, from server G based on input of an operator associated with the credits or information at server G. The A is used to present barcode to the other device, whereas on the contrary, D1 **fails** to disclose **that an authorized person enables a data transfer enquiry mode at the user interface device (124), which he carries, which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115)**. ***As a result, the instant invention is completely different as compared to D1.***

With regard to the cited document D2,

Applicant want to assert that, D2 merely discloses the transmission of information using light communication and **fails** to disclose that at least the feature of the independent claim 1 that is **an authorized person enables a data transfer enquiry mode at the user interface device (124), which he carries, which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115).**

2. The D1 and D2, either alone or in combination, **fail** to disclose about "**an authorized person enables a data transfer enquiry mode at the user interface device (124), which he carries, which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115)**".

Hence, based on the above arguments and differences, the Applicant submits that:

a) D1-D2 explicitly fails to disclose at least the features mentioned in the above paragraphs.

b) Further, the technical effect solution provided by the present invention is technically and logically different from the technical problem being provided by the cited prior art document D1-D2, even if considered individually or in combination with other (without any teaching, suggestion and/or motivation).

Hence unless the reference, for example each of the cited reference D1-D2, explicitly and individually discloses the above recited inventive steps/feature/component of amended independent claim 1 in individually and/or in combination, and the manner in which they are constructed/arranged/structured/ functions /operates, the objection of INVENTIVE STEP cannot be applicable.

WITH RESPECT TO DEPENDENT CLAIMS 2 AND 3

The dependent claims on file after the amendments are now read as follows:

AMENDED DEPENDENT CLAIM 2:

The vehicle identification device as claimed in claim 1, characterized in that, the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data signal from micro-

controller (115) using the cloud storage (131), if all information into the data signal are correct, the person allows the vehicle to move.

AMENDED DEPENDENT CLAIM 3:

The vehicle identification device as claimed in claim 1, characterized in that the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), **if the information into the data signal is incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine. (Emphasis Added)**

At the outset, Applicant humbly and respectfully submits that the cited prior-art references D1 & D2, either alone or in combination, **fail** to disclose at least the below features of the amended dependent claim 2 and 3 of the present invention:

- an the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), **if the information into the data signal is incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine.** (Emphasis Added)

The present invention provides improved technical solution which discloses that, a receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. The authorized person's user interface device is connected to the cloud storage. **The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move. If the data are not correct, he shall send a communication to the vehicle microcontroller and initiate a command to stop the ignition.** Once the microcontroller receives the signal, it stops the engine ignition power supply and engine goes to OFF mode. The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily.

Hence, based on the above arguments and differences, the Applicant submits that:

a) D1-D2 explicitly fails to disclose at least the features mentioned in the above paragraphs.

b) Further, the technical effect solution provided by the present invention is technically and logically different from the technical problem being provided by the cited prior art document D1-D2, even if considered individually or in combination with other (without any teaching, suggestion and/or motivation).

Hence unless the reference, for example each of the cited reference D1-D2, explicitly and individually discloses the above recited inventive steps/feature/component of amended independent claim 1 in individually and/or in combination, and the manner in which they are constructed/arranged/structured/ functions /operates, the objection of INVENTIVE STEP cannot be applicable.

The Applicant respectfully asserts that D1-D2 fails to teach each and every element of amended independent claim 1, and consequently fails to anticipate the amended claim 1. Also, by virtue of their dependencies on the novel and inventive independent claims, the respective dependent claims 2-4 shall also be considered Inventive.

Consequently, the subject matter of the amended independent claim 1, involves inventive step over D1-D2. Hence, a favorable consideration is therefore requested in view of this submission and revision, and therefore requests the learned Controller to withdraw the present objection.

Accordingly, the Applicant therefore requests the Learned Controller to withdraw the present objection.

WITH RESPECT TO INDEPENDENT CLAIMS 5

The independent claims 5 on file after the amendments are now read as follows:

AMENDED INDEPENDENT CLAIM 5:

A method for authentication of vehicle data using wireless communication system (101), **characterized in that** the method comprises the steps of:

- enabling a data transfer enquiry mode at main user interface device (124) by an au-

thorized person, and a radio frequency signal from said user interface device (124) is transmitted to a vehicle's main server (131) through wireless communication;

- receiving at the vehicle main server (131) the radio frequency signal from the User Interface (124) of authorized person, wherein the signal is processed by a vehicle microcontroller (115);
- transmitting the signal from vehicle microcontroller (115) to a vehicle user interface device (113); and
- transmitting a data signal, when a user touches an icon on the user interface device (113), from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116), wherein

the data signal from microcontroller (115) is converted and encoded into binary data using a lamp driver (117), and the encodes binary data send to a LED lamp (118), wherein said LED lamp (118) transmits the binary data information to the User interface device (124) through visible light such as photons**. (Emphasis Added)**

At the outset, Applicant humbly and respectfully submits that the cited prior-art references D1 & D2, either alone or in combination, **fail** to disclose at least the below features of the amended independent claim 5 of the present invention:

- **enabling a data transfer enquiry mode at main user interface device (124) by an authorized person, and a radio frequency signal from said user interface device (124) is transmitted to a vehicle's main server (131) through wireless communication.** (**Emphasis Added**)

The present invention provides improved technical solution which discloses **a novel system for vehicle identification, wherein an authorized person, who checks a vehicle in a vehicle checking area, enables the data transfer enquiry mode at a user interface device (124), that he carries. A signal from the user interface device (124) is transmitted to vehicle the server through wireless communication. Vehicle server receives the radio frequency signal from authorized person that signal is processed by vehicle microcontroller.** The signal from vehicle microcontroller is transmitted to vehicle user interface device touch screen display (113). It enables the touch icon to send the vehicular information. The user touches the icon enabled in the

screen for transmitting data from vehicle to authorized person. The microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted into binary data in a lamp driver. The driver encodes binary data to LED lamp. Said the LED lamp gets energized and starts glowing, the binary data information is transmitted through visible light such as photons.

With regard to the cited document D1 & D2,

1. As per FER, the Examiner has cited that "*The subject matter as claimed in claims 1-9 lack inventive step in view of documents D1 and D2*".

With regard to the cited document D1

Applicant want to assert that, in para [0017], [0031] and [0032], the D1 discloses that:

According to Para [0017] of D1

"In a third embodiment of the invention, there is provided another client device for secure authentication processes. The client device can include a processor and a computer-readable medium, having stored thereon a plurality of instructions for causing the processor to perform a method. The method can include receiving, from a other client device associated with a first party to a transaction, a machine readable pattern representing one or more items available for transfer and identity information of the first party. The method can also include transmitting a message to a second server associated with a second party to the transaction, where the message is based on an interpretation of the machine readable pattern, and the message including the identity associated with the machine readable code and a request for transfer of at least a portion of the items specified in the machine readable code from a first server associated with the first party to the second server. The method can further include, subsequent to the transmitting, receiving, from the second server, an indication of a completion of the processing of the identity and the request via an authentication process between the first server and a second server and that items were are transferred between the first server and the second server."

According to Para [0031] of D1

"In operation, the device A would provide a request J to perform the transfer I of credits, or other information, from server G based on input of an operator associated with the credits or information at server G. Thereafter, the credits are allocated from an account in server G to C or the information is transferred from server G to C. For security purposes, the request J and the transfer I can be encrypted. These communications can also contain identity authorization information indicating that device A is an authorized proxy of its operator. Thus, identity is established."

According to Para [0032] of D1

"In the embodiment shown in FIG. 1, upon initiating a transaction, the machine readable code B is generated at device A and made available or transferred F to a computing device of a second party to the transaction, device D. For example, as shown in FIG. 1, the machine readable medium B is provided in the form of a barcode and is read by a camera E in at device D to transfer the machine readable code to device D. The machine readable code can contain the identity authorization information and address of a second server H. The address could be fixed, or it could be simply entered or stored as a variable in E. The net result is that D emits or transmits a status K to server H that the credits or information represented by the read operation F have been successfully or unsuccessfully received at E."

Based on the above, the Applicant asserts that D1 elaborates device "A" that would provide a request J to perform the transfer I of credits, or other information, from server G based on input of an operator associated with the credits or information at server G. The A is used to present barcode to the other device, whereas on the contrary, D1 **fails** to disclose **that an authorized person enables a data transfer enquiry mode at the user interface device (124), which he carries, which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115). *As a result, the instant invention is completely different as compared to D1.***

With regard to the cited document D2,

Applicant want to assert that, D2 merely discloses the transmission of information using light communication and **fails** to disclose that at least the feature of the independent claim 5 that is **an authorized person enables a data transfer enquiry mode at the user interface device (124), which he carries, which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115).**

2. The D1 and D2, either alone or in combination, **fail** to disclose about "**an authorized person enables a data transfer enquiry mode at the user interface device (124), which he carries, which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115)**".

Hence, based on the above arguments and differences, the Applicant submits that:

a) D1-D2 explicitly fails to disclose at least the features mentioned in the above paragraphs.

b) Further, the technical effect solution provided by the present invention is technically and logically different from the technical problem being provided by the cited prior art document D1-D2, even if considered individually or in combination with other (without any teaching, suggestion and/or motivation).

Hence unless the reference, for example each of the cited reference D1-D2, explicitly and individually discloses the above recited inventive steps/feature/component of amended independent claim 5 in individually and/or in combination, and the manner in which they are constructed/arranged/structured/ functions /operates, the objection of INVENTIVE STEP cannot be applicable.

The Applicant respectfully asserts that D1-D2 fails to teach each and every element of amended independent claim 5, and consequently fails to anticipate the amended claim 5. Also, by virtue of their dependencies on the novel and inventive independent claims, the respective dependent claims 6-9 shall also be considered Inventive.

Consequently, the subject matter of the amended independent claim 5, involves inventive step over D1-D2. Hence, a favorable consideration is therefore requested in view of this submission and revision, and therefore requests the learned Controller to withdraw the present objection.

Accordingly, the Applicant therefore requests the Learned Controller to withdraw the present objection.

PARAGRAPH (2)-NON-PATENTABILITY U/S 3(m)

With regards to objection pertaining to section 3(m) of Patent Act, the Examiner has cited that:

> "*Claims 5-9 recite various method steps without disclosing what apparatus/structural component carried out said steps. In absence any structural limitations, subject matter of these claims is mere scheme and/or mental act and hence falls within scope of clause (m) of section (3) of the Patents Act, 1970 (as amended). Therefore invention claimed in said claims is not patent-able*"

At the outset, the Applicant requests the controller to consider the amended set of claims were structural limitations of the used devices/components are provided to make the claims tangible, and further amended to clearly define the invention.

Further, the Applicant submits that as per section 3(m) of Patent Act "**a mere scheme or rule or method of performing mental act or method of playing game**"

Based on the above, the Applicant respectfully disagrees with the Examiner and submits that the present invention does not fall under section 3(m) as the present invention overcomes various technical problems, has technical effect, involves and utilizes physical component, and relies on the operation of the hardware component to perform various physical activities as mentioned in the above paragraphs. **Accordingly, the Applicant therefore requests the Learned Controller to withdraw the present objection**

PARAGRAPH (4)- CLARITY AND CONCISENESS;

With regards to the objection that "*Claims 1-4,7-9 recite various means. These claims are not clear in respect of structural features of the said means. Also these claims are not supported by the description. In absence of such structural features the claims are indefinite and do not satisfy the requirement of section 10(4) (c) of the Act"*, put forth in the examination report, the Ap-

plicant respectfully submits that Page 9-11 of specification on file completely discloses the invention and its operation or use and the method by which it is to be performed, and best method of use. The Applicant respectfully submits that it would be sufficient for a person to understand the invention after going through Page 9-11 of specification on file. However, support for each elements and features of amended claims 1 to 9 are provided below.

Elements/Features of Claims	**Support from Specification**
A vehicle identification device with wireless communication system (101) **characterized in that,** comprises: a visible light communication unit (111), wherein the visible light communication unit (111) comprises: a vehicle controlling unit (112), which includes a microcontroller (115) and user interface (113); and a data transmitting means (116), which includes a lamp driver (117), and LED lamp (118); and a data receiving and processing means (121) which comprises: a photo detector (122); and a user interface device (124); and a cloud storage (131); (Claim 1)	Figure 2 depicts the block diagram of visible light communication system such as light fidelity (Li-Fi) based **vehicle identification device (101) in accordance with the preferred embodiment of present invention. Said vehicle identification device (101) is mounted with visible light communication unit (111), data receiving & processing means (121) and cloud storage (131). The visible light communication unit (111) comprises of at least a vehicle controlling means (112) and a data transmitting means (116). Said vehicle controlling means (112) sends the vehicle information to data transmitting means (116) through wire. The data transmitting means (116) sends the vehicle information to data receiving & processing means (121) through visible light. The data receiving and processing means (121) is connected to the cloud server (131) via user interface device through internet for verifying the data collected from user. [Page 9]**

wherein an authorized person, in a vehicle checking area, enables a data transfer enquiry mode at the user interface device (124) which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115), wherein when a user touches an icon on the user interface (113) that enables transmission of the data signal from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116) and data receiving and processing means (121). (Claim 1)	Figure 3 illustrates the flowchart which describes the method of working of light fidelity based vehicle information transmission system in accordance with the present invention. **The authorized person who see the vehicle in a vehicle checking area enables the data transfer enquiry mode at main user interface device. Signal from user interface device is transmitted to vehicle main server (Not shown) through wireless communication. Vehicle main server receives the radio frequency signal from authorized person that signal is processed by vehicle microcontroller. The signal from vehicle microcontroller is transmitted to vehicle user interface device touch screen display. It enables the touch icon to send the vehicular information. The user touches the icon enabled in the screen for transmitting data from vehicle to authorized person. The microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted into binary data in a lamp driver.** The driver encodes binary data to LED lamp. Said the LED lamp gets energized and starts glowing, the binary data information is transmitted through visible light such as photons. **[Page 10]**
characterized in that, the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if all in-	Receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. **The authorized person's user interface device is connected to the cloud storage. The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move.** If the data are not correct, he shall send a communication to the vehicle microcontroller and

formation into the data signal are correct, the person allows the vehicle to move. (Claim 2)	initiate a command to stop the ignition. Once the microcontroller receives the signal, it stops the engine ignition power supply and engine goes to OFF mode. The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily. [**Page 11]**
characterized in that the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if the information into the data signal is incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine. (Claim 3)	Receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. **The authorized person's user interface device is connected to the cloud storage. The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move. If the data are not correct, he shall send a communication to the vehicle microcontroller and initiate a command to stop the ignition. Once the microcontroller receives the signal, it stops the engine ignition power supply and engine goes to OFF mode.** The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily. [**Page 11]**
The vehicle identification device as claimed in claim 2, characterized in that the information into the data signal comprises such as registration	Vehicle controlling means (112) comprises of an inbuilt power backup (114), microcontroller (115) and user interface touch screen display (113). The electric power from inbuilt power backup (114) is'sent to the microcontroller (115). The microcontroller is connected to the user interface device (113). **The vehi-**

certificate, insurance and pollution certificate. (Claim 4)	**cle information such as registration certificate, insurance and pollution certificate are stored in the microcontroller (115).** The user interface for example a touch screen display (113) is used to enable a touch icon when the authorized person send the signal. [**Page 9]**
A method for authentication of vehicle data using wireless communication system (101), **characterized in that** the method comprises the steps of: - enabling a data transfer enquiry mode at main user interface device (124) by an authorized person, and a radio frequency signal from said user interface device (124) is transmitted to a vehicle's main server (131) through wireless communication; - receiving at the vehicle main server (131) the radio frequency signal from the User Interface (124) of authorized person, wherein the signal is processed by a vehicle microcontroller (115); - transmitting the signal from vehicle microcontroller (115) to a vehicle user interface device (113); and	Figure 3 illustrates the flowchart which describes the method of working of light fidelity based vehicle information transmission system in accordance with the present invention. **The authorized person who see the vehicle in a vehicle checking area enables the data transfer enquiry mode at main user interface device. Signal from user interface device is transmitted to vehicle main server (Not shown) through wireless communication. Vehicle main server receives the radio frequency signal from authorized person that signal is processed by vehicle microcontroller. The signal from vehicle microcontroller is transmitted to vehicle user interface device touch screen display. It enables the touch icon to send the vehicular information. The user touches the icon enabled in the screen for transmitting data from vehicle to authorized person. The microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted into binary data in a lamp driver. The driver encodes binary data to LED lamp. Said the LED lamp gets energized and starts glowing, the binary data information is transmitted through visible light such as photons. [Page 10]**

- transmitting a data signal, when a user touches an icon on the user interface device (113), from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116), wherein the data signal from microcontroller (115) is converted and encoded into binary data using a lamp driver (117), and the encodes binary data send to a LED lamp (118), wherein said LED lamp (118) transmits the binary data information to the User interface device (124) through visible light such as photons. (Claim 5)	
characterized in that receiving the visible light at a receiving and processing means (121) that has a photo detector (122), wherein the received data is amplified and processed by an amplification and processing means (123) which is then displayed at the authorized person's user interface de-	**Receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. The authorized person's user interface device is connected to the cloud storage.** The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move. If the data are not correct, he shall send a communication to the vehicle microcontroller and initiate a command to stop the ignition. Once the microcontroller receives the signal, it stops

vice(124). (Claim 6)	the engine ignition power supply and engine goes to OFF mode. The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily. **[Page 11]**
characterized in that the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are correct, the person allows the vehicle to move. (Claim 7)	Receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. **The authorized person's user interface device is connected to the cloud storage. The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move. If the data are not correct, he shall send a communication to the vehicle microcontroller and initiate a command to stop the ignition. Once the microcontroller receives the signal, it stops the engine ignition power supply and engine goes to OFF mode.** The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily. [**Page 11]**
characterized in that the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if	Receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. **The authorized person's user interface device is connected to the**

all information into the data are incorrect, the person sends a communication to the micro-controller (115) to initiate a command to stop the vehicle engine. (Claim 8)	**cloud storage. The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move. If the data are not correct, he shall send a communication to the vehicle microcontroller and initiate a command to stop the ignition. Once the microcontroller receives the signal, it stops the engine ignition power supply and engine goes to OFF mode.** The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily. [**Page 11]**
characterized in that information into the data comprises such as registration certificate, insurance and pollution certificate. (Claim 9)	Vehicle controlling means (112) comprises of an inbuilt power backup (114), microcontroller (115) and user interface touch screen display (113). The electric power from inbuilt power backup (114) is'sent to the microcontroller (115). The microcontroller is connected to the user interface device (113). **The vehicle information such as registration certificate, insurance and pollution certificate are stored in the microcontroller (115).** The user interface for example a touch screen display (113) is used to enable a touch icon when the authorized person send the signal. [**Page 9]**

Applicant therefore requests the Learned Controller to withdraw the present objection.

PARAGRAPH (5)- OTHERS REQUIREMENTS;

1) With regards to the objection that "*Care should be taken in reply of FER , if there is any amendment it should be done U/s 59 and mark-up copy also submitted along with amendment. Proper reason shall be provided regarding amendment"*, put forth in the

examination report, the applicant want to submits that no amendment in the complete specification initiated by him, further the Applicant requests the controller to consider the amended set of claims 1-9 where the claims have been suitably amended, and make the invention clear, concise and clearly define the subject matter of the invention, which are now in condition of allowance.

2) With regards to the objection that "*Please note that this Examination is done on the basis of electronically uploaded documents in the emodule only. You may verify all documents as filed are uploaded electronically or not, and bring to the notice of the concerned discrepancies if any"*, put forth in the examination report, the applicant submits that he has checked all the documents as filed in the patent office, the Applicant requests the controller to consider the amended set of claims 1-9 where the claims have been suitably amended.

Applicant therefore requests the Learned Controller to withdraw the present objection.

PART III: FORMAL REQUIREMENTS:

Regarding Statement & Under Taking (Form -3) -**Noted and complied with**

Conclusion:

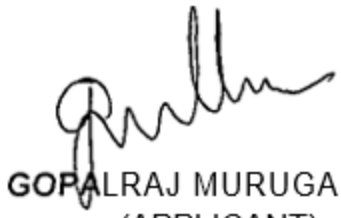
Applicant submits amendments and remarks in view of the office action. Applicant believes to have overcome all objections mentioned in the examination report, and believes that the application is now in condition for allowance. Applicant respectfully requests that a timely notice of allowance be issued in this case. In case of any query, the Examiner is requested to call the undersigned. We request the Examiner to kindly offer us an opportunity of being heard under Section 14 of the Indian Patent Law before taking a decision adverse to the Applicant's interest.

Yours faithfully,

Enclosures:

1. Amended Claims-Clean Copy
2. Amended Claims-Marked-up Copy
3. A copy of Form 3

Dated this 10th day of April 2020.



GOPALRAJ MURUGANANTH
(APPLICANT)

I Claim,

1. A vehicle identification device with wireless communication system (101) **characterized in that,** comprises:

a visible light communication unit (111), wherein the visible light communication unit (111) comprises:

a vehicle controlling unit (112), which includes a microcontroller (115) and user interface (113); and

a data transmitting means (116), which includes a lamp driver (117), and LED lamp (118); and

a data receiving and processing means (121) which comprises:

a photo detector (122); and

a user interface device (124); and

a cloud storage (131);

wherein an authorized person, in a vehicle checking area, enables a data transfer enquiry mode at the user interface device (124) which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115), wherein when a user touches an icon on the user interface (113) that enables transmission of the data signal from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116) and data receiving and processing means (121).

2. The vehicle identification device as claimed in claim 1, characterized in that, the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if all information into the data signal are correct, the person allows the vehicle to move.
3. The vehicle identification device as claimed in claim 1, characterized in that the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if the information into the data signal is incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine.

4. The vehicle identification device as claimed in claim 2, characterized in that the information into the data signal comprises such as registration certificate, insurance and pollution certificate.
5. A method for authentication of vehicle data using wireless communication system (101), **characterized in that** the method comprises the steps of:

- enabling a data transfer enquiry mode at main user interface device (124) by an authorized person, and a radio frequency signal from said user interface device (124) is transmitted to a vehicle's main server (131) through wireless communication;

- receiving at the vehicle main server (131) the radio frequency signal from the User Interface (124) of authorized person, wherein the signal is processed by a vehicle microcontroller (115);

- transmitting the signal from vehicle microcontroller (115) to a vehicle user interface device (113); and

- transmitting a data signal, when a user touches an icon on the user interface device (113), from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116), wherein

the data signal from microcontroller (115) is converted and encoded into binary data using a lamp driver (117), and the encodes binary data send to a LED lamp (118), wherein said LED lamp (118) transmits the binary data information to the User interface device (124) through visible light such as photons.

6. The method for authentication of vehicle data as claimed in claim 5, characterized in that receiving the visible light at a receiving and processing means (121) that has a photo detector (122), wherein the received data is amplified and processed by an amplification and processing means (123) which is then displayed at the authorized person's user interface device(124).
7. The method for authentication of vehicle data as claimed in claim 5, characterized in that the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are correct, the person allows the vehicle to move.

8. The method for authentication of vehicle data as claimed in claim 5, characterized in that the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine.
9. The method for authentication of vehicle data as claimed in claim 5, characterized in that information into the data comprises such as registration certificate, insurance and pollution certificate.

Dated this 10th day of April 2020.

GOPALRAJ MURUGANANTH
(APPLICANT)

I Claim,

1. A ~~Vehicle~~ vehicle identification device with wireless communication system (101) **characterized in that,** comprises:

a visible light communication unit (111), wherein the visible light communication unit (111) comprises:

a vehicle controlling unit (112), which includes a microcontroller (115) and user interface (113); and

a data transmitting means (116), which includes a lamp driver (117), and LED lamp (118); and

a data receiving and processing means (121) which comprises:

a photo detector (122); and

a user interface device (124); and

a cloud storage (131);

wherein an authorized person, in a vehicle checking area, enables a data transfer enquiry mode at the user interface device (124) which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115), wherein when a user touches an icon on the user interface (113) that enables transmission of the data signal from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116) and data receiving and processing means (121).

~~data receiving & processing means (121) and cloud storage (131) **characterized in that**, said vehicle controlling means (112) sends the vehicle information to data transmitting means (116) and the data transmitting means (116) sends the vehicle information to data receiving & processing means (121) through visible light.~~

2. The vehicle identification device as claimed in claim 1, characterized in that, the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if all information into the data are correct, the person allows the vehicle to move.~~said visible light communication unit (111) comprises of at least a vehicle controlling means (112) and a data transmitting means (116).~~

3. The vehicle identification device as claimed in claim 1, characterized in that the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if the information into the data signal is incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine. ~~said vehicle controlling means (112) comprises of an inbuilt power backup (114), microcontroller (115) and user interface touch screen display (113).~~

4. The vehicle identification device as claimed in claim ~~1~~2, characterized in that the information into the data signal comprises such as registration certificate, insurance and pollution certificate.~~Data receiving and processing means (121) comprises of photo detector (122), data amplification and processing means (123), user interface device (124) and inbuilt power supply (125) and said user interface device (124) is wirelessly connected to the cloud storage (131) through internet.~~

5. ~~The~~ A method for authentication of vehicle data ~~working of Vehicle identification device with~~ using wireless communication system (101)**, characterized in that** ~~comprises~~ the method comprises the steps ~~such as~~of:~~;~~

- enabling ~~the~~ a data transfer enquiry mode ~~is enabled~~ at main user interface device (124) by ~~the~~ an authorized person, and ~~the~~ a radio frequency signal from said user interface device (124) is transmitted to a vehicle's main server (131) through wireless communication;

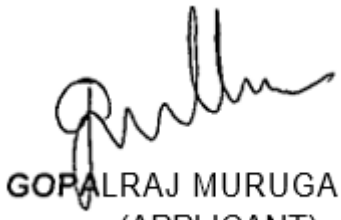
- receiving ~~Vehicle~~ at the vehicle main server (131) ~~receives~~ the radio frequency signal from the User Interface (124) of authorized person, ~~and~~ wherein the signal is processed by a vehicle microcontroller (115);

- transmitting ~~The~~ the signal from vehicle microcontroller (115) ~~is transmitted~~ to a vehicle user interface device (113) ~~and enables the touch icon in the touch screen display to send the vehicular information~~; and

- transmitting a data signal, when ~~the~~ a user touches ~~the~~ an icon ~~enabled in the screen~~ on the user interface device (113), ~~for transmitting data~~ from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116), wherein ~~vehicle to authorized person, the microcontroller (115) sends the vehicle data to lamp driver (117);~~

~~Characterized in that,~~ the ~~electrical~~ data signal from microcontroller (115) is converted and encoded into binary data ~~in~~ using ~~the~~ a lamp driver (117), and the encodes binary data send to a LED lamp (118), wherein said LED lamp (118) transmits the binary data information to ~~the~~ the ~~Receiver~~ User interface device (124) through visible light such as photons.

6. The method for authentication of vehicle data~~vehicle identification device~~ as claimed in claim ~~5~~1 and 6, characterized in that ~~the~~ receiving the visible light at a receiving and processing means (121) ~~module~~ that has a photo detector (122), ~~for receiving the visible light signals from LED lamp and~~ wherein the received data is amplified and processed by ~~amplifier~~ an amplification and processing means (123) which is then ~~and microcontroller and sent~~ displayed ~~to~~ at the authorized person's user interface device(124).
7. The method for authentication of vehicle data ~~vehicle identification device~~ as claimed in claim ~~1~~5, characterized in that the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are correct, the person allows the vehicle to move. ~~wireless vehicle information transmission system comprises of two major parts such as vehicle data transmitting means (211) and vehicle data receiving means (221) and the Transmitting means (211) sends the vehicle information to the receiving means (221) through wireless communication module such as ZigBee.~~
8. The method for authentication of vehicle data ~~vehicle identification device~~ as claimed in claim ~~1~~5, characterized in that the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine. ~~said transmitting means (211) on a vehicle comprises of inbuilt power backup (213), microcontroller (214),'LCD display (212), Zigbee module (215) and transceiver (216).~~
9. The method for authentication of vehicle data ~~vehicle identification device~~ as claimed in claim ~~1~~5, characterized in that information into the data comprises such as registration certificate, insurance and pollution certificate. ~~said vehicle information receiving means (221) comprises of LCD display (222), microcontroller (223), Zigbee (224) and transceiver (225).~~



GOPALRAJ MURUGANANTH
(APPLICANT)

FORM 3

THE PATENTS ACT 1970

(39 of 1970)

&

The Patents rules, 2003

STATEMENT AND UNDERTAKING UNDER SECTION 8

(See section 8, Rule 12)

Name of Applicant

I, **GOPALRAJ,Murugananth**

hereby declare:

(i) That we, who have made this application No. **201841006184** Dated **19/02/2018,** have not made any application for the same/substantially the same invention outside the India.

Name of the country	Date of application	Application No.	Status of the application	Date of publication	Date of grant
NA	NA	NA	NA	NA	NA

(iii) That we undertake that upto the date of grant of the patent, by the controller, we would keep him informed in writing the details regarding corresponding applications for patents filed outside India within three months from the date of filing of such application.

Dated this 10th day of April 2020.

GOPALRAJ MURUGANANTH
(APPLICANT)

To,

The controller of Patents,
The Patent Office, At Chennai, India.

I Claim,

1. A ~~Vehicle~~ vehicle identification device with wireless communication system (101) **characterized in that,** comprises:

a visible light communication unit (111), wherein the visible light communication unit (111) comprises:

a vehicle controlling unit (112), which includes a microcontroller (115) and user interface (113); and

a data transmitting means (116), which includes a lamp driver (117), and LED lamp (118); and

a data receiving and processing means (121) which comprises:

a photo detector (122); and

a user interface device (124); and

a cloud storage (131);

wherein an authorized person, in a vehicle checking area, enables a data transfer enquiry mode at the user interface device (124) which transmits a signal to the cloud storage (131), the cloud (131) sends a data signal to the microcontroller (115), wherein when a user touches an icon on the user interface (113) that enables transmission of the data signal from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116) and data receiving and processing means (121).

~~data receiving & processing means (121) and cloud storage (131) **characterized in that**, said vehicle controlling means (112) sends the vehicle information to data transmitting means (116) and the data transmitting means (116) sends the vehicle information to data receiving & processing means (121) through visible light.~~

2. The vehicle identification device as claimed in claim 1, characterized in that, the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if all information into the data are correct, the person allows the vehicle to move.~~said visible light communication unit (111) comprises of at least a vehicle controlling means (112) and a data transmitting means (116).~~

3. The vehicle identification device as claimed in claim 1, characterized in that the authorized person checks the authenticity of the received data signal from microcontroller (115) using the cloud storage (131), if the information into the data signal is incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine. ~~said vehicle controlling means (112) comprises of an inbuilt power backup (114), microcontroller (115) and user interface touch screen display (113).~~

4. The vehicle identification device as claimed in claim ~~1~~2, characterized in that the information into the data signal comprises such as registration certificate, insurance and pollution certificate.~~Data receiving and processing means (121) comprises of photo detector (122), data amplification and processing means (123), user interface device (124) and inbuilt power supply (125) and said user interface device (124) is wirelessly connected to the cloud storage (131) through internet.~~

5. ~~The~~ A method for authentication of vehicle data ~~working of Vehicle identification device with~~ using wireless communication system (101)**, characterized in that** ~~comprises~~ the method comprises the steps ~~such as~~of:~~;~~

- enabling ~~the~~ a data transfer enquiry mode ~~is enabled~~ at main user interface device (124) by ~~the~~ an authorized person, and ~~the~~ a radio frequency signal from said user interface device (124) is transmitted to a vehicle's main server (131) through wireless communication;

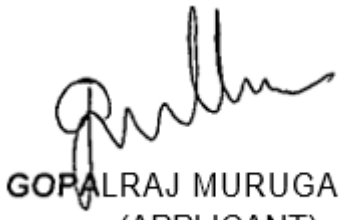
- receiving ~~Vehicle~~ at the vehicle main server (131) ~~receives~~ the radio frequency signal from the User Interface (124) of authorized person, ~~and~~ wherein the signal is processed by a vehicle microcontroller (115);

- transmitting ~~The~~ the signal from vehicle microcontroller (115) ~~is transmitted~~ to a vehicle user interface device (113) ~~and enables the touch icon in the touch screen display to send the vehicular information~~; and

- transmitting a data signal, when ~~the~~ a user touches ~~the~~ an icon ~~enabled in the screen~~ on the user interface device (113), ~~for transmitting data~~ from the microcontroller (115) to the user interface device (124) of the authorized person via the data transmitting means (116), wherein ~~vehicle to authorized person, the microcontroller (115) sends the vehicle data to lamp driver (117);~~

~~Characterized in that,~~ the ~~electrical~~ data signal from microcontroller (115) is converted and encoded into binary data ~~in~~ using ~~the~~ a lamp driver (117), and the encodes binary data send to a LED lamp (118), wherein said LED lamp (118) transmits the binary data information to ~~the~~ the ~~Receiver~~ User interface device (124) through visible light such as photons.

6. The method for authentication of vehicle data~~vehicle identification device~~ as claimed in claim ~~5~~1 and 6, characterized in that ~~the~~ receiving the visible light at a receiving and processing means (121) ~~module~~ that has a photo detector (122), ~~for receiving the visible light signals from LED lamp and~~ wherein the received data is amplified and processed by ~~amplifier~~ an amplification and processing means (123) which is then ~~and microcontroller and sent~~ displayed ~~to~~ at the authorized person's user interface device(124).
7. The method for authentication of vehicle data ~~vehicle identification device~~ as claimed in claim ~~1~~5, characterized in that the authorized person's user interface device (124) is connected to the cloud storage (131), wherein the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are correct, the person allows the vehicle to move. ~~wireless vehicle information transmission system comprises of two major parts such as vehicle data transmitting means (211) and vehicle data receiving means (221) and the Transmitting means (211) sends the vehicle information to the receiving means (221) through wireless communication module such as ZigBee.~~
8. The method for authentication of vehicle data ~~vehicle identification device~~ as claimed in claim ~~1~~5, characterized in that the authorized person checks the authenticity of the received data from microcontroller (115) using the cloud storage (131), if all information into the data are incorrect, the person sends a communication to the microcontroller (115) to initiate a command to stop the vehicle engine. ~~said transmitting means (211) on a vehicle comprises of inbuilt power backup (213), microcontroller (214),'LCD display (212), Zigbee module (215) and transceiver (216).~~
9. The method for authentication of vehicle data ~~vehicle identification device~~ as claimed in claim ~~1~~5, characterized in that information into the data comprises such as registration certificate, insurance and pollution certificate. ~~said vehicle information receiving means (221) comprises of LCD display (222), microcontroller (223), Zigbee (224) and transceiver (225).~~



GOPALRAJ MURUGANANTH
(APPLICANT)

ABSTRACT

HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME

The present invention relates to the field of vehicle headlamp high beam shifting apparatus using light fidelity (LiFi) to avoid accidents while driving a vehicle at night time. A head lamp beam (4) is shifted using a headlamp beam shifting apparatus (11) and said headlamp beam shifting apparatus (11) consists of a sensing device (21), a headlamp control arrangement (51) and a motorized lamp turning unit (61). The method of shifting consists of sensing and analyzing the light, sending and receiving signals to shift and reduce the headlamp high beam disturbance for opposite vehicle.

FIG – 1

WE CLAIM:

1. A headlamp beam shifting apparatus for vehicles, said beam shifting in a vehicle (2) and another opposite vehicle (3) with head lamp beam (4) **characterized in that,** said head lamp beam (4) is shifted using a headlamp beam shifting apparatus (11) and said headlamp beam shifting apparatus (11) consists of a sensing device (21), a headlamp control arrangement (51) and a motorized lamp turning unit (61).

2. The headlamp beam shifting apparatus as claimed in claim 1, **wherein,** said sensing device (21) comprises of signal transmitting unit (22) and signal receiving unit (23).

3. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** said signal transmitting unit (22) consists of a light dependent resistor sensor (24), a radar speed gun (25), a lamp turning motor (26), an inbuilt power backup (27), a microcontroller (28), a lamp driver (29), and an LED lamp (30).

4. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** said signal receiving unit (23) consists of a photo detector (41), an amplifier and a processor (42), a microcontroller (43), an inbuilt power supply (44), a relay circuit (45) and vehicle headlamp (46).

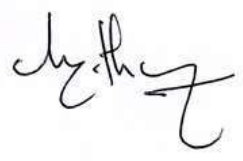
5. The headlamp beam shifting apparatus as claimed in claim 1, **wherein,** said headlamp control arrangement (51) consists of a light dependent resistor sensor (24), a radar speed gun (25), an LED lamp turning motor (26), an inbuilt power supply (27), a microcontroller (28), a lamp driver (29), an LED lamp (30), an amplifier and processor (31), a photo detector (32), and a relay circuit (33) which are connected with a set of vehicle head lamps (34).

6. The headlamp beam shifting apparatus as claimed in claim 1, **wherein** said motorized lamp turning unit (61) comprises of a motor (26), shaft (62), Lamp fixing holder (63), LED lamp (30) and lamp mounting cover (64).

7. The method of working of headlamp beam shifting apparatus, said method comprises the steps of;
   - Sensing the intensity of light beam (4) received from the opposite vehicle (3) by light dependent resistor (24) of sensing device (21) and the sensed signal is sent to the microcontroller (28) for processing;
   - Analyzing the light intensity level by the microcontroller (28) of light signal and receiving unit (21) and compares the value from the standard parameters;

- Sending signal to a lamp driver (29) for reducing the light beam of opposite vehicle (3) by the controller (28) if received high beam of light is determined;
- Converting an electrical signal into a binary signal by the lamp driver (29) and sends signal to the vehicle (2) head lamp and said vehicle head lamp transmits a signal to the opposite vehicle (3) through light;
- Receiving transmitted light through the photo detector (41) of the signal receiving unit (23) present in the opposite vehicle (3) and said light is processed by amplifier and processor (42) and sent to the vehicle microcontroller (43);
- Sending signal to relay circuit (45) from the microcontroller (42) for reducing the light beam intensity according to the information from said microcontroller (42);
- Activating the radar speed gun simultaneously by microcontroller (42) to measure the speed of the vehicle (4) and said microcontroller (42) sends a signal to lamp turning motor (26) according to vehicle speed for turning the LED lamp (30) based on the information from microcontroller (42);
- Sending a signal to lamp turning motor (26) by the microcontroller (42) to turn the LED lamp (30) to its original position when the receiving signal is disconnected from vehicle (2).

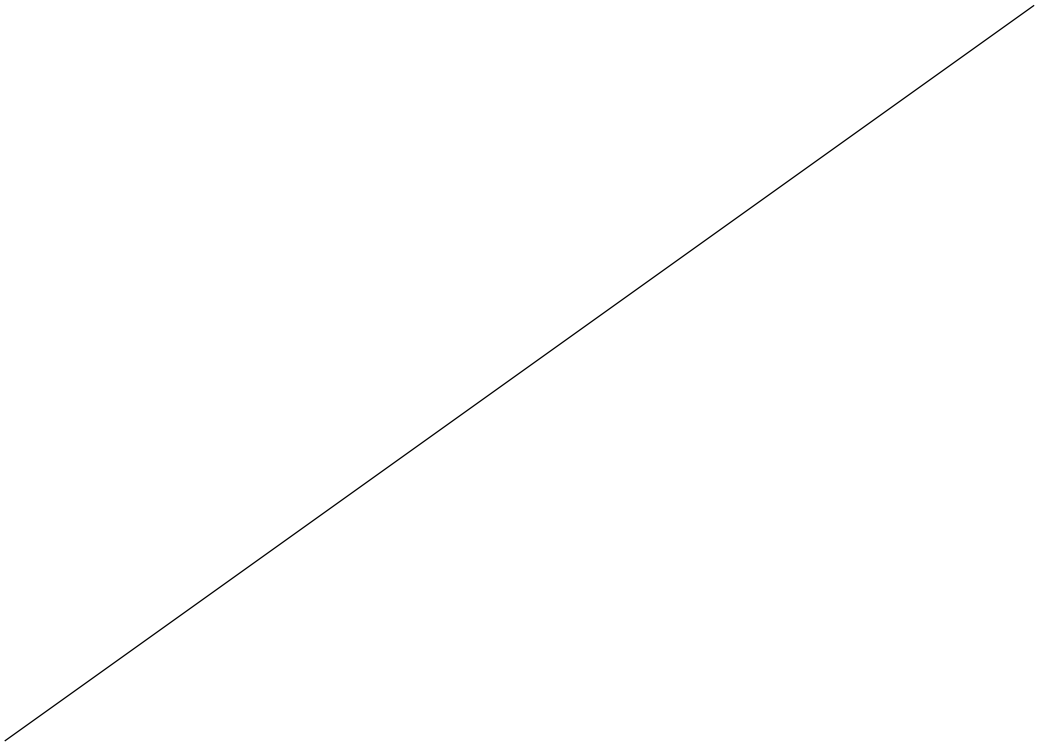
Dated this 4th day of April 2018



AMIRTHALINGAM JOTHI MURUGAN
ROBOTEX
COIMBATORE – 641004
(APPLICANT)

disconnected, the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position. The process is completed when receiving signal is disconnected from light dependent resistor (LDR) sensor.

In view of the present disclosure which describes preferred and best modes for providing an apparatus for mounting and dismounting the luminescent devices. Modifications and variations would present themselves to those skilled in the art without departing from the scope and spirit of this invention. Any modifications and variations coming within the meaning and range of equivalency are considered within the scope.



FORM 3

THE PATENT ACT, 1970

(39 of 1970)

&

The Patents Rules, 2003

STATEMENT AND UNDERTAKING UNDER SECTION 8

(See Section 8; rule 12)

We, We, **ROBOTEX**, an Indian Registered Startup, office located at 4/28 A, Rajalakshmi Nagar, Lakshmipuram, Peelamedu, Coimbatore - 641004 Tamil Nadu, India..… Hereby declare:

(i) that we have not made any application for the same / substantially the same invention outside India .

~~Or~~

(ii) ~~that I /We who have made this application No……..…… Dated ……alone /jointly with……made for the same/substantially same invention, application(s) for patent in the other countries, the particulars of which are given below:~~

Name of the Country	Date of Application	Application. No.	Status of the Application	Date of Publication	Date of Grant
		NONE			

(iii) that the rights in the application has/have been assigned to : **NONE**

(iv) that we undertake that up to date of the grant of the patent by the Controller, we would keep him informed in writing the details regarding corresponding applications for patents filed out side India within six months from the date of filing of such application.

Dated this 20th day of December 2021.



AMIRTHALINGAM JOTHIMURUGAN
MANAGING PARTNER
ROBOTEX(Applicant)

To,
The Controller of Patents,
The Patent Office, at Chennai.

ET 653538155 IN

D. NO: 6262

700314848

January 20, 2020

To
The Controller of Patents,
The Patent Office,
Chennai.

Dear Sir,

Re: Change of Applicant status reg.
Title: **"HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME"**
Application number: 201841012997
Filed on: 05/04/2018

I enclose here with the following documents for the purpose of "Change of Applicant".

(a) Form – 6 (in duplicate)
(b) Form – 28 (in duplicate)
(c) Deed of Assignment - Original
(d) Deed of Assignment – Copy
(e) Copy of Startup Certificate of Recognition (2 Copies)

FEES

(f) Fee for Change of Applicant = Rs. 880

Fee Rs. 880/- vide Demand draft No.326902 dated 20/01/2020 on Bank of Baroda.

Please take the application on record and advise us of any further documents/information required for the purpose of this application.

Yours faithfully,

Amirthalingam Jothimurugan

Encl: as above.

22-Jan-2020/6262/201841012997/Correspondence

PATENT OFFICE CHENNAI 24/01/2020 14:33



தமிழ்நாடு तमिलनाडु TAMILNADU BX 283438

T. KAVITHA
STAMP VENDOR
1/29-A, SAKTHIEASWARNAGAR,
VELLALORE, COIMBATORE
TAMILNADU
REF. No : 7323/B1/2008/4

A. Jothimurugan
23-12-2019
Cbe

ALD

700314849

DEED OF ASSIGNMENT

THIS DEED OF ASSIGNMENT made and entered into on this 20th day of January in the year 2020 between **AMIRTHALINGAM JOTHIMURUGAN** residing at 2/245, II Street, Teacher's Colony, V.K Road Cheran Maanagar (PO), Coimbatore, Tamil Nadu, India, hereinafter referred to as the "ASSIGNOR" (which expression shall, unless repugnant to the context meaning thereof, be deemed to include its heirs, successors , subsidiaries, administrators, affiliates, assigns etc) of the ONE PART and **ROBOTEX,** a Partnership Firm, office located at, 4/28 A, Rajalakshmi Nagar, Lakshmipuram, Peelamedu, Coimbatore - 641004 Tamil Nadu, India, hereinafter referred to as "ASSIGNEE" (which expression shall, unless repugnant to the context meaning thereof, be deemed to include its heirs, successors, representatives and assigns etc) of the OTHER PART.

WHEREAS the said ASSIGNOR is the applicant in respect of an invention entitled "**HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME**" (hereinafter referred to as 'said invention') under Indian Patent Application No. 201841012997 dated April 05, 2018 (hereinafter referred to as 'said application') and holds the entire right, title and interest in said invention and application for patent, which is valid and subsisting;

D BALAKRISHNAN M.Com.,B.L.,
REG.No. CC/NP/
Valid upto
COIMBATORE DISTRICT
MY COMMISSION EXPIRES ON
NOTARY
GOVT. OF TAMIL NADU

CHENNAI 24/01/2020 14:33

For ROBOTEX
Partner

22-Jan-2020/6262/201841012997/OTHERS

AND WHEREAS the ASSIGNEE is desirous of acquiring the entire right, title and interest in and to said invention and application for patent and the ASSIGNOR is agreeable to assign the said invention;

NOW, THEREFORE, in consideration of the INR 1,000 (the receipt whereof the ASSIGNOR hereby acknowledges) and the existing relationship between the Assignor and the Assignee, the ASSIGNOR hereby assigns unto the ASSIGNEE its entire right, title and interest in and to the said invention and application for patent and any Letters Patents to be obtained thereon.

The ASSIGNOR hereby agrees that the ASSIGNOR will make, execute and deliver all other instruments in writing including any and all further application papers and other documents, and will communicate to said ASSIGNEE, all facts known to the ASSIGNOR relating to said invention and application for patent and generally do all things which may be necessary or desirable to vest the ASSIGNEE with the entire right, title and interest in and to the said invention and application for patent and any patent granted thereon;

IN WITNESS WHEREOF the parties hereto have set and subscribed their respective hands hereunto the day and year first herein above written.

SIGNED and DELIVERED by Assignor,
the party of ONE PART

AMIRTHALINGAM JOTHIMURUGAN,

Signature:
Name: A. JOTHI MURUGAN
PAN No: AHZPJ2176L

SIGNED and DELIVERED by Assignee,
the party of the OTHER PART

ROBOTEX

For ROBOTEX
Partner

Signature:
Name: A. JOTHI MURUGAN
Status: Managing Partner
PAN No: AAYFR5168E

Witnesses:

1. ASHA SEBASTIAN - NO: 2/6- CO-OPERATIVE COLONY, TVS NAGAR ROAD, KAVUNDAMPALAYAM, COIMBATORE - 641030.

2. PRANAV.B NO.60 BHARATHI ROAD, TELUNGUPALAYALAM PUDHUR STELWAPURAM, COIMBATORE - 641026.

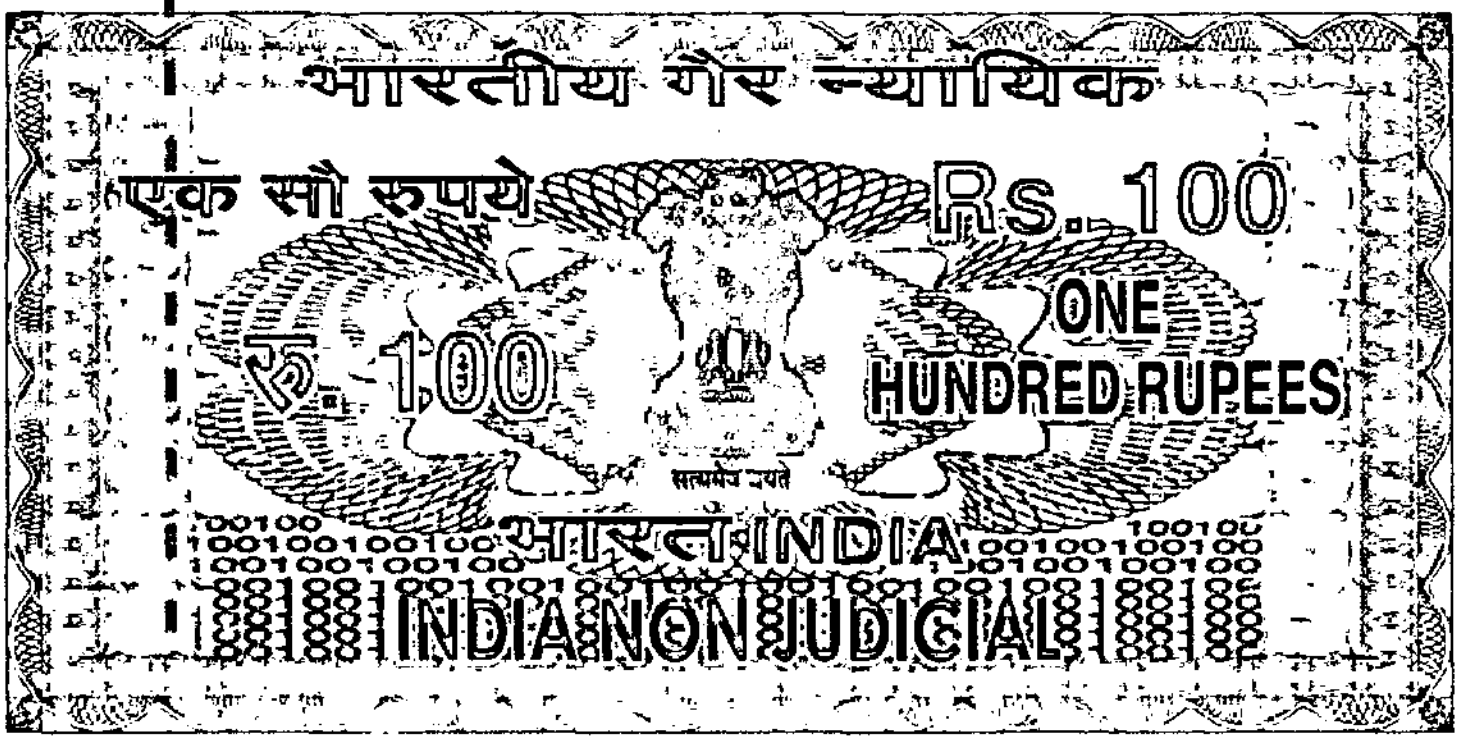
TRUE COPY

NOTARY D. BALAKRISHNAN REG. NO. GOVT. OF TAMILNADU COMMISSION EXPIRES ON 2020

20/01/2020

D. BALAKRISHNAN, M.Com.,B.L.,
ADVOCATE & NOTARY PUBLIC
Enl. No.Ms. 2158/2003
No 21-A Lal Bhagadur Nagar, Lakshmi Puram,
Ramanathapuram Coimbatore - 641 004.
Cell : 99427 24917

22-Jan-2020/6262/20184101299 7/OTHERS



தமிழ்நாடு तमिलनाडु TAMILNADU BX 283438

T. KAVITHA
STAMP VENDOR
1/29-A, SAKTHIEASWARNAGAR,
VELLALORE, COIMBA
TAMILNADU
REF No: 7323/61/2008/1

23-12-2019
A. Jothimurugan
Che

DEED OF ASSIGNMENT

THIS DEED OF ASSIGNMENT made and entered into on this 20th day of January in the year 2020 between **AMIRTHALINGAM JOTHIMURUGAN** residing at 2/245, II Street, Teacher's Colony, V.K Road Cheran Maanagar (PO), Coimbatore, Tamil Nadu, India, hereinafter referred to as the "ASSIGNOR" (which expression shall, unless repugnant to the context meaning thereof, be deemed to include its heirs, successors , subsidiaries, administrators, affiliates, assigns etc) of the ONE PART and **ROBOTEX,** a Partnership Firm, office located at, 4/28 A, Rajalakshmi Nagar, Lakshmipuram, Peelamedu, Coimbatore - 641004 Tamil Nadu, India, hereinafter referred to as "ASSIGNEE" (which expression shall, unless repugnant to the context meaning thereof, be deemed to include its heirs, successors, representatives and assigns etc) of the OTHER PART.

WHEREAS the said ASSIGNOR is the applicant in respect of an invention entitled "**HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME**" (hereinafter referred to as 'said invention') under Indian Patent Application No. 201841012997 dated April 05, 2018 (hereinafter referred to as 'said application') and holds the entire right, title and interest in said invention and application for patent, which is valid and subsisting;

NOTARY ... CHENNAI 24/01/2020 14:34

For ROBOTEX
Partner

22-Jan-2020/6262/201841012997/OTHERS

AND WHEREAS the ASSIGNEE is desirous of acquiring the entire right, title and interest in and to said invention and application for patent and the ASSIGNOR is agreeable to assign the said invention;

NOW, THEREFORE, in consideration of the INR 1,000 (the receipt whereof the ASSIGNOR hereby acknowledges) and the existing relationship between the Assignor and the Assignee, the ASSIGNOR hereby assigns unto the ASSIGNEE its entire right, title and interest in and to the said invention and application for patent and any Letters Patents to be obtained thereon.

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IN WITNESS WHEREOF the parties hereto have set and subscribed their respective hands hereunto the day and year first herein above written.

SIGNED and DELIVERED by Assignor,
the party of ONE PART

AMIRTHALINGAM JOTHIMURUGAN,

Signature:
Name: A. JOTHI MURUGAN
PAN No: AHZPJ2176L

SIGNED and DELIVERED by Assignee,
the party of the OTHER PART

ROBOTEX

For ROBOTEX

Partner

Signature:
Name: A. JOTHI MURUGAN
Status: Managing Partner
PAN No: AAYFR5168E

Witnesses:

1. ASHA SEBASTIAN - 2/6. CO-OPERATIVE COLONY, TVS NAGAR ROAD, KARUNDAMPALAYAM, COIMBATORE - 641030.

2. PRANAV.B - NO.60 BHARATHI ROAD, TELUNGUPALAYAM PUDHUR SELVAPURAM, COIMBATORE - 641026.

TRUE COPY

NOTARY
D. BALAKRISHNAN
REGD. NO. 2158/2003
COIMBATORE DISTRICT
No. 21-A, Lal Bhagadur Nagar, Lakshmi Puram,
Peelamedu, Coimbatore - 641 004.
Cell : 99427 24917
STATE OF TAMIL NADU

20/01/2020

D. BALAKRISHNAN, M.Com.,B.L.,
ADVOCATE & NOTARY PUBLIC
Enl. No.Ms. 2158/2003
No.21-A, Lal Bhagadur Nagar, Lakshmi Puram,
Peelamedu, Coimbatore - 641 004.
Cell : 99427 24917

PATENT OFFICE COPY 24/01

22-Jan-2020/626/2018410129997/OTHERS

PATENT OFFICE CHENNAI

22-Jan-2020/6262/201841012997/OTHERS

Certificate No.: DIPP29475

Department of Industrial Policy & Promotion
Ministry of Commerce & Industry
Government of India

CERTIFICATE OF RECOGNITION

Department of Industrial Policy and Promotion

This is to certify that ***ROBOTEX*** incorporated/ registered as a ***Registered Partnership*** on ***25-10-2018*** , is recognized as a startup by the Department of Industrial Policy and Promotion.

Date of Issue: 04-12-2018
Place of Issue: New Delhi

The certificate shall only be valid for the entity:

- Up to seven years from the date of its incorporation/ registration; and
- If its turnover for any of the financial years since incorporation/ registration has not exceeded Rs. 25 crores.

Note:

- **Authorities accepting this Certificate may check its validity on the Startup India portal (https://www.startupindia.gov.in/)**
- This certificate is not the Certificate issued by the Inter Ministerial Board and is NOT VALID for availing Tax benefits
- This is a system generated certificate and hence does not require physical signature
- If such recognition is found to have been obtained without uploading the relevant documents or on the basis of false information, DIPP reserves the right to revoke the recognition certificate immediately without any prior notice or reason.

PATENT OFFICE CHENNAI

22-Jan-2020/6262/2018410129 97/OTHERS

Certificate No.: DIPP29475

Department of Industrial Policy & Promotion
Ministry of Commerce & Industry
Government of India

CERTIFICATE OF RECOGNITION

Department of Industrial Policy and Promotion

This is to certify that ***ROBOTEX*** incorporated/ registered as a ***Registered Partnership*** on ***25-10-2018*** , is recognized as a startup by the Department of Industrial Policy and Promotion.

Date of Issue: 04-12-2018

Place of Issue: New Delhi

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தமிழ்நாடு तमिलनाडु TAMILNADU BX 283438

T. KAVITHA
STAMP VENDOR
1/29-A, SAKTHIEASWARNAGAR,
VELLALORE, COIMBATORE
TAMILNADU
REF. No : 7323/B1/2008/4

A. Jothimurugan
23-12-2019
Cbe

ALD

700314849

DEED OF ASSIGNMENT

THIS DEED OF ASSIGNMENT made and entered into on this 20th day of January in the year 2020 between **AMIRTHALINGAM JOTHIMURUGAN** residing at 2/245, II Street, Teacher's Colony, V.K Road Cheran Maanagar (PO), Coimbatore, Tamil Nadu, India, hereinafter referred to as the "ASSIGNOR" (which expression shall, unless repugnant to the context meaning thereof, be deemed to include its heirs, successors , subsidiaries, administrators, affiliates, assigns etc) of the ONE PART and **ROBOTEX,** a Partnership Firm, office located at, 4/28 A, Rajalakshmi Nagar, Lakshmipuram, Peelamedu, Coimbatore - 641004 Tamil Nadu, India, hereinafter referred to as "ASSIGNEE" (which expression shall, unless repugnant to the context meaning thereof, be deemed to include its heirs, successors, representatives and assigns etc) of the OTHER PART.

WHEREAS the said ASSIGNOR is the applicant in respect of an invention entitled "**HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME**" (hereinafter referred to as 'said invention') under Indian Patent Application No. 201841012997 dated April 05, 2018 (hereinafter referred to as 'said application') and holds the entire right, title and interest in said invention and application for patent, which is valid and subsisting;

D BALAKRISHNAN M.Com.,B.L.,
REG.No. CC/NP/
Valid upto
COIMBATORE DISTRICT
MY COMMISSION EXPIRES ON
NOTARY
GOVT. OF TAMIL NADU

CHENNAI 24/01/2020 14:33

For ROBOTEX
Partner

22-Jan-2020/6262/201841012997/OTHERS

AND WHEREAS the ASSIGNEE is desirous of acquiring the entire right, title and interest in and to said invention and application for patent and the ASSIGNOR is agreeable to assign the said invention;

NOW, THEREFORE, in consideration of the INR 1,000 (the receipt whereof the ASSIGNOR hereby acknowledges) and the existing relationship between the Assignor and the Assignee, the ASSIGNOR hereby assigns unto the ASSIGNEE its entire right, title and interest in and to the said invention and application for patent and any Letters Patents to be obtained thereon.

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IN WITNESS WHEREOF the parties hereto have set and subscribed their respective hands hereunto the day and year first herein above written.

SIGNED and DELIVERED by Assignor,
the party of ONE PART

AMIRTHALINGAM JOTHIMURUGAN,

Signature:
Name: A. JOTHI MURUGAN
PAN No: AHZPJ2176L

SIGNED and DELIVERED by Assignee,
the party of the OTHER PART

ROBOTEX

For ROBOTEX
Partner

Signature:
Name: A. JOTHI MURUGAN
Status: Managing Partner
PAN No: AAYFR5168E

Witnesses:

1. ASHA SEBASTIAN - NO: 2/6- CO-OPERATIVE COLONY, TVS NAGAR ROAD, KAVUNDAMPALAYAM, COIMBATORE - 641030.

2. PRANAV.B NO.60 BHARATHI ROAD, TELUNGUPALAYALAM PUDHUR STELWAPURAM, COIMBATORE - 641026.

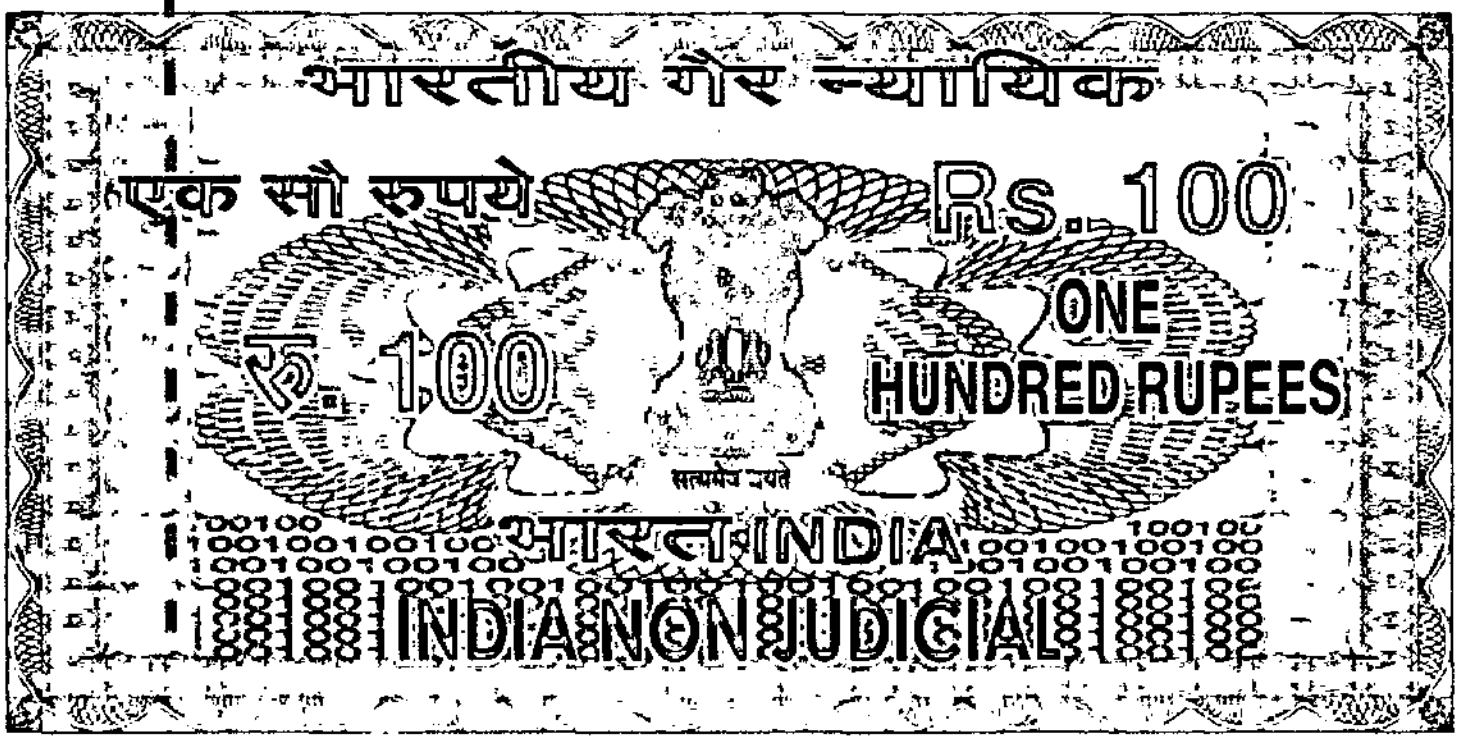
TRUE COPY

NOTARY D. BALAKRISHNAN REG. NO. GOVT. OF TAMILNADU COMMISSION EXPIRES ON 2020

20/01/2020

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ADVOCATE & NOTARY PUBLIC
Enl. No.Ms. 2158/2003
No 21-A Lal Bhagadur Nagar, Lakshmi Puram,
Ramanathapuram Coimbatore - 641 004.
Cell : 99427 24917

22-Jan-2020/6262/20184101299 7/OTHERS



தமிழ்நாடு तमिलनाडु TAMILNADU BX 283438

T. KAVITHA
STAMP VENDOR
1/29-A, SAKTHIEASWARNAGAR,
VELLALORE, COIMBA
TAMILNADU
REF No: 7323/61/2008/1

23-12-2019 A. Jothimurugan

DEED OF ASSIGNMENT

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NOTARY ... CHENNAI 24/01/2020 14:34

For ROBOTEX

Partner

22-Jan-2020/6262/201841012997/OTHERS

AND WHEREAS the ASSIGNEE is desirous of acquiring the entire right, title and interest in and to said invention and application for patent and the ASSIGNOR is agreeable to assign the said invention;

NOW, THEREFORE, in consideration of the INR 1,000 (the receipt whereof the ASSIGNOR hereby acknowledges) and the existing relationship between the Assignor and the Assignee, the ASSIGNOR hereby assigns unto the ASSIGNEE its entire right, title and interest in and to the said invention and application for patent and any Letters Patents to be obtained thereon.

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SIGNED and DELIVERED by Assignor,
the party of ONE PART

AMIRTHALINGAM JOTHIMURUGAN,

Signature:
Name: A. JOTHI MURUGAN
PAN No: AHZPJ2176L

SIGNED and DELIVERED by Assignee,
the party of the OTHER PART

ROBOTEX

For ROBOTEX

Partner

Signature:
Name: A. JOTHI MURUGAN
Status: Managing Partner
PAN No: AAYFR5168E

Witnesses:

1. ASHA SEBASTIAN - 2/6. CO-OPERATIVE COLONY, TVS NAGAR ROAD, KARUNDAMPALAYAM, COIMBATORE - 641030.

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20/01/2020

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Enl. No.Ms. 2158/2003
No.21-A, Lal Bhagadur Nagar, Lakshmi Puram,
Peelamedu, Coimbatore - 641 004.
Cell : 99427 24917

PATENT OFFICE COPY 24/01

22-Jan-2020/626/2018410129997/OTHERS

PATENT OFFICE CHENNAI

22-Jan-2020/6262/201841012997/OTHERS

Certificate No.: DIPP29475

Department of Industrial Policy & Promotion
Ministry of Commerce & Industry
Government of India

CERTIFICATE OF RECOGNITION

Department of Industrial Policy and Promotion

This is to certify that ***ROBOTEX*** incorporated/ registered as a ***Registered Partnership*** on ***25-10-2018*** , is recognized as a startup by the Department of Industrial Policy and Promotion.

Date of Issue: 04-12-2018
Place of Issue: New Delhi

The certificate shall only be valid for the entity:

- Up to seven years from the date of its incorporation/ registration; and
- If its turnover for any of the financial years since incorporation/ registration has not exceeded Rs. 25 crores.

Note:

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PATENT OFFICE CHENNAI

22-Jan-2020/6262/2018410129 97/OTHERS

Certificate No.: DIPP29475

Department of Industrial Policy & Promotion
Ministry of Commerce & Industry
Government of India

CERTIFICATE OF RECOGNITION

Department of Industrial Policy and Promotion

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700314850

FORM 28

THE PATENTS ACT, 1970 (39 of 1970)

AND

THE PATENTS RULES, 2003

TO BE SUBMITTED BY A SMALL ENTITY / STARTUP

[See rules 2 (fa), 2(fb) and 7]

We, **ROBOTEX**, an Indian Registered Startup, office located at 4/28 A, Rajalakshmi Nagar, Lakshmipuram, Peelamedu, Coimbatore - 641004 Tamil Nadu, India, **Applicant** in respect of the patent application no. **201841012997** hereby declare that, we are a registered Startup in accordance with rule 2(fb) and submit the following document as proof:

For claiming the status of a registered Startup, we hereby furnish the copy of;

- **"Company Registration Certificate" – GST Nr. "33AAYFR 5168E1ZR"**
- **Certificate of Recognition for Startup from DIPP.**

The information provided herein is correct to the best of my knowledge and belief.

Dated this 20th day of January 2020.

A. Jothi Murugan
Managing Partner
For ROBOTEX
(Applicant)

To
The Controller of Patents,
The Patent Office,
Chennai.

22-Jan-2020/6262/201841012997/FORM28

PATENT OFFICE CHENNAI 24/01/2020 14:33

INTELLECTUAL PROPERTY INDIA
एकस्व/PATENTS|अभिकल्प/DESIGNS|
व्यापार चिह्न/TRADE MARKS|भौगोलिक
उपदर्शन/GEOGRAPHICAL INDICATIONS

सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA

एकस्व कार्यालय / THE PATENT OFFICE
बौद्धिक सम्पदा भवन / I.P.O. BUILDING
जी.एस.टी.रोड, गिंडी/ G.S.T.Road, Guindy,
चेन्नई/ Chennai- 600032
दूरभाष/ Tel. No. : (091)(044)22502081-84
फ़ैक्स/ Fax: 044 22502066

Email/ई मेल : Chennai-patent@nic.in
वेबसाइट /Website:http://ipindia.nic.in

सं.संख्या/Ref.No /आवेदन संख्या/Application No/ 201841012997 दिनांक/Date of Dispatch/Email: 21/06/2021

सेवा मे,/To
jothimurgan,
A. JOTHIMURUGAN 2/245 B, III STREET, TEACHERS COLONY,VK ROAD, CHERAN MAANAGAR, COIMBATORE. - 641 035.
Email : jothimurugan196@gmail.com

विषय: एकस्व अधिनियम, 1970 की धारा 12 व 13 तथा एकस्व नियम, 2003 के अधीन परीक्षण रिपोर्ट
Subject: Examination report under sections 12 & 13 of the Patents Act, 1970 and the Patents Rules, 2003.

1. उपर्युक्त आवेदन के संदर्भ मे परीक्षण रिपोर्ट (अर्थात, एकस्व नियम, 2003 (यथा संशोधित) के नियम 24-ख(3) में विनिर्दिष्ट आपत्तियों का प्रथम कथन) इसके साथ संलग्न है। यह रिपोर्ट परीक्षण हेतु अनुरोध दिनांक 05/04/2018 के उत्तर मे जारी की गयी है। परीक्षण रिपोर्ट का उत्तर दाखिल करने की अंतिम तिथि (अर्थात, इस रिपोर्ट में लगाई गयी सभी आवश्यकताओं के अनुपालन की अवधि) आवेदक को आपत्तियों का प्रथम कथन जारी होने की तिथि से छः माह है।
   Please find enclosed herewith an Examination Report (i.e. a first statement of objections as specified in Rule 24-B(3) of The Patents Rules, 2003 (as amended)) in respect of above-mentioned application. This report is issued with reference to a request for examination dated 05/04/2018.The last date for filing a response to the Examination Report (i.e. a period to comply with all the requirements raised in this examination report) is six months from the date on which the first statement of objections is issued to the Applicant.

2. यदि रिपोर्ट के अंतर्गत लगाई गयी आवश्यकताओं का अनुपालन एकस्व नियम, 2003 (यथा संशोधित) के नियम 24 ख(5) में विनिर्दिष्ट अवधि के भीतर अंदर अनुपालन नहीं किया गया तो एकस्व अधिनियम 1970 की धारा 21(1) के अधीन वर्तमान आवेदन को परित्यक्त माना जाएगा।
   The instant application shall be deemed to have been abandoned under Section 21(1) of The Patents Act, 1970, unless all the requirements raised in this report are complied with in the period as specified in Rule 24-B (5) of The Patents Rules, 2003 (as amended).

3. आपका ध्यान एकस्व नियम, 2003 के नियम 24 ख(6) के प्रावधानों की ओर भी आमंत्रित किया जाता है।
   Your attention is also invited to the provisions of Rule 24-B (6) of the Patents Rules 2003.

4. आपको सलाह दी जाती है कि शीघ्र निपटान हेतु अपना उत्तर शीघ्र प्रस्तुत करें।
   You are advised to file the reply at the earliest for early disposal.

Dinesh Nath Goswami
नियंत्रक पेटेंट/ Controller of Patents

संलग्न/Enclosed: अपरोक्त अनुसार/As above

टिप्पणी: यह इलेक्ट्रोनिक रूप से उत्पन्न रिपोर्ट है।
NOTE: This is an electronically generated report.

सभी पत्राचार नियंत्रक एकस्व को उपरोल्लिखित पते पर भेजा जाये।
All communications should be sent to the Controller of Patents at the above mentioned address.

THE PATENT OFFICE

परीक्षण रिपोर्ट /Examination Report

आवेदन संख्या /Application Number	201841012997
दाखिल करने की तिथि /Date of Filing	05/04/2018
पूर्विक्ता दिनांक /Date of Priority	--
पीसीटी अंतर्राष्ट्रीय आवेदन की संख्या व दिनांक / PCT International Application No. & Date	--
आवेदक /Applicant	ROBOTEX
परीक्षण हेतु अनुरोध की संख्या व दिनांक /Request for Examination No. & Date	R20184010419 05/04/2018
प्रकाशन की तिथि /Date of Publication	06/04/2018

इस परीक्षण रिपोर्ट के चार भाग हैं, अर्थात रिपोर्ट का सारांश, विस्तृत तकनीकी रिपोर्ट, औपचारिक आवश्यकताएँ तथा रिकॉर्ड मे दस्तावेज़ /
This examination report consists of four parts, namely summary of the report, detailed technical report, formal requirements and documents on record.

भाग -1: रिपोर्ट का सारांश
PART-I: SUMMARY OF THE REPORT

क्र. सं. /Sl. No.	अधिनियम के तहत आवश्यकताओं पर विस्तृत टिप्पणियां /Requirements under the Act		दावों की संख्या /Claim Numbers	टिप्पणी /Remarks
1.	धारा 2(1)(ज) के तहत आविष्कार /Invention u/s 2(1)(j)	नवीनता /Novelty	दावे /Claims: 1-7	हाँ /Yes
			दावे /Claims:	नहीं /No
		आविष्कारी कदम / Inventive step	दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-7	नहीं /No
		औद्योगिक उपयोगिता /Industrial Applicability	दावे /Claims: 1-7	हाँ /Yes
			दावे /Claims:	नहीं /No
2.	धारा 3 के अधीन पेटेंट-अयोग्यता (यदि हाँ, खंड 3(क-त) /Non-patentability u/s 3 (if yes, specify section3(a-p))		दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-7	नहीं /No
3.	धारा 4 के अधीन पेटेंट-अयोग्यता /Non-patentability u/s 4		दावे /Claims:	हाँ /Yes
			दावे /Claims: 1-7	नहीं /No
4.	धारा 10 (5) के अधीन आविष्कार की एकलता /Unity of invention u/s 10 (5)		दावे /Claims:	हाँ /Yes
			दावे /Claims: 1,7	नहीं /No
5.	[धारा 10(5) व 10(4) (ग)] के अधीन दावे /Claims [u/s 10(5) & 10(4) (c)]	स्पष्टता/ संक्षिप्तता /Clarity / Conciseness	दावे /Claims: 2-6	हाँ /Yes
			दावे /Claims: 1,7	नहीं /No
		परिभाषिकता /Definitive	दावे /Claims: 1-7	हाँ /Yes
			दावे /Claims:	नहीं /No
		विवरण द्वारा समर्थित /Supported by description	दावे /Claims: 1-7	हाँ /Yes
			दावे /Claims:	नहीं /No
		क्षेत्र /Scope	दावे /Claims: 1-7	हाँ /Yes
			दावे /Claims:	नहीं /No
6.	अन्य आवश्यकता (एँ) /Other requirement(s): a) Retyped pages of the specification sheets should be submitted in duplicate wherever correction/amendment is carried out. While amending the specification, no new matter should be added beyond the scope of protection originally disclosed. b) The applicant is requested to clearly identify/mark the amendments carried out (if any) in a separate copy (from the original filed set); irrespective of either they concern amendments by addition, correction, replacement or deletion in the specification.			

भाग –II विस्तृत तकनीकी रिपोर्ट
PART-II: DETAILED TECHNICAL REPORT

क. उद्धरित दस्तावेजों की सूची /A.List of documents cited:

(क) पेटेंट साहित्य / (a). Patent Literature :

क्र. सं. / Sl.no	दस्तावेज़ों का विवरण /Details of documents	प्रकाशन तिथि(दिन/माह/वर्ष) / Publication date	उद्धरित दस्तावेज़ का प्रासंगिक विवरण (पृष्ठ व अनुच्छेद संख्या) / Relevant description (page and paragraph no.) of cited document	उद्धरित दस्तावेज़ के प्रासंगिक दावे / Relevant claims of cited document	अभिकथित आविष्कार के दावे /Claims of alleged invention
1	D1:DE102012009908A1	24/01/2013	Abstract; Description; Figures	1	1-7
2	D2:EP3300949A1	04/04/2018	Abstract; Description; Figures	1	1-7
3	D3:WO2017020056A1	09/02/2017	Abstract; Description; Figures	1	1-7

(ख) गैर-पेटेंट साहित्य /(b).Non-patent literature

कोई दस्तावेज़ उद्धृत नहीं है /No Document Cited

ख. अधिनियम के तहत आवश्यकताओं पर विस्तृत टिप्पणियां /B. Detailed observations on the requirements under the Act:

(1).आविष्कारी कदम / INVENTIVE STEP:

(I) ऊपर उद्धरित दस्तावेज़(जों) के संदर्भ 2(1)(j)(a) of the Patent Act 1970 मे स्पष्ट अध्यापन(नों) को ध्यान मे रखते हुए, निम्नलिखित कारणों से दावा(वों) (1-7) मे आविष्कारी कदम की कमी है
Claim(s) (1-7) lack(s) inventive step, being obvious in view of teaching (s) of cited document(s) above under reference 2(1)(j)(a) of the Patent Act 1970 for the following reasons:

The alleged invention does not meet the requirement of section 2(1)(j)(a) of The Patent Act, because the claimed subject matter does not constitute an Inventive step in view of documents: D1:DE102012009908A1 D2:EP3300949A1 D3:WO2017020056A1 Document D1 discloses a method for controlling the illumination of a traffic situation (K) formed by at least two motor vehicles (F1, F2, F3, F4, F5), wherein the motor vehicles are equipped with lighting systems having at least low beam and high beam, characterized in that the at least two Motor vehicles by means of Car2Car communication exchange data, wherein the data determined by each participating motor vehicle for exchange at least the illumination parameters of the motor vehicle, which reflect the illumination settings of the lighting system, as well as data on the position of the motor vehicle, and each participating motor vehicle, the received data of the other involved Motor vehicles considered in the adaptation of

their own lighting parameters to optimize the illumination of the traffic situation (K). Document D2 discloses a method for automatic control of a headlight of a vehicle, the method comprising receiving, by a mobile computing device, vehicle related information from a plurality of sensors and external information from a plurality of external sources associated with the mobile computing device, wherein the mobile computing device is associated with an operator of a vehicle and is communicatively coupled with the vehicle; computing, by the mobile computing device, an intensity and an orientation of a headlight of the vehicle based on one or more vehicle lighting patterns, wherein said one or more vehicle lighting patterns are generated based on behavior of the headlight of the vehicle, which is operated by the operator, for a pre-defined duration in association with the vehicle related information and the external information; and providing, by the mobile computing device, the computed intensity and the orientation of the headlight of the vehicle to a lighting control module of the vehicle for automatic control of the headlight of the vehicle. Document D3 discloses an adjusting system for a lighting apparatus for vehicles, which lighting apparatus (1) is set up to emit light for forming at least one, preferably dynamic, light distribution (3) described by a parameter set (2) into an area in front of the lighting apparatus (1), wherein the adjusting system is set up to modify the at least one light distribution (3) described by the parameter set (2), and wherein the adjusting system comprises a light controller (4), which light controller (4) stores the parameter set (2) describing the light distribution (3), and which light controller (4) is associated with the lighting apparatus (1) and is set up to control the lighting apparatus (1) such that the lighting apparatus (1) emits light for forming the at least one light distribution (3) in accordance with the parameter set (2) into an area in front of the lighting apparatus (1), wherein the light controller (4) has an associated operator control unit (5) formed separately from the lighting apparatus (1) and the light controller (4), which operator control unit (5) is set up to accept user inputs (6) and to transmit the user inputs (6) to the light controller (4), wherein the light controller (4) is set up to modify the parameter set (2) to produce a further parameter set (8), in accordance with the user inputs (6), that describes at least one further user-defined, preferably dynamic light distribution (7) compliant with legal standards, and to adjust the lighting apparatus (1) such that the lighting apparatus (1) emits light for forming the at least one further light distribution (7) in accordance with the further parameter set (8) into an area in front of the lighting apparatus (1). Hence a person skilled in the art will be motivated to combine the teachings of the cited documents and come to a conclusion similar to present alleged invention.

(2).आविष्कार की एकलता /UNITY OF INVENTION:

(I) दावा(वों) 1,7 मे आविष्कार की एकलता की कमी है क्योंकि दावे किसी एक आविष्कार या आविष्कारों का समूह जो मिलकर एक आविष्कारी संकल्पना की संरचना करें उससे संबन्धित नहीं हैं। Claim(s) 1,7 lack(s) unity of invention as the claims do not relate to a single invention or to a group of inventions linked so as to form a single inventive concept:

The application contains multiple independent claims 1,7. These claims defines a plurality of distinct inventions. The various definitions of the subject matter make it difficult to determine the matter for which protection is being sought. Thus the claims as a whole are not clear and not concise, and the requirement of section 10(5) of the Act is not met. Hence claims should be linked in such a way that they form a single inventive concept.

(II) इस आवेदन का दावा (के दावे) सह-लंबित आवेदन संख्या के दावे के परस्पर विरोध मे है।
Claim(s)of the instant application conflict(s) with claim(s) of co-pending application no.

(4).प्रकटन की दक्षता /SUFFICIENCY OF DISCLOSURE:

(I) सार /Abstract:

Abstract should be prepared in accordance with the instructions contained in the rule 13(7) of the Patent Rules, 2003(as amended).

(5).स्पष्टता एवं संक्षिप्तता /CLARITY AND CONCISENESS:

(I) दावा(वे) 1,7 के संबंध मे स्पष्ट रूप से परीभाषित नहीं हैं.

Claim(s) 1,7 are not clearly worded in respect of:

All essential novel inventive constructive features should be given in Claim-1 and inventive features should be characterized.

भाग – III: औपचारिक आवश्यकताएँ /PART-III: FORMAL REQUIREMENTS

आपत्तियां /Objections	टिप्पणी /Remarks
Form 6	Form-6 may be allowed.
Format of Specification (rule 13)	Blank space in the specification should be scored out.
Other Deficiencies	a) Details regarding the search and/or examination report including claims of the application allowed, as referred to in Rule 12(3) of the Patent Rule, 2003, in respect of same or substantially the same invention filed in all countries outside India along with appropriate translation where applicable, should be submitted within a period of Six months from the date of receipt of this communication as provided under section 8(2) of the Indian Patents Act. b) Application number should be mentioned on all relevant Forms.

भाग-IV: रिकॉर्ड मे दस्तावेज़ /PART-IV: DOCUMENTS ON RECORD

निम्नलिखित दस्तावेज़ों के आधार पर यह परीक्षण रिपोर्ट तैयार की गयी है
The examination report has been prepared based on the following documents:

कार्यसूची तिथि / Docket Date	कार्यसूची संख्या /Docket Number	प्रविष्टि संख्या विवरण /Entry Number Description
05 Apr 2018	26339	OTHERS(NON CASH)
05 Apr 2018	26339	1-New Application For Patent With Provisional /Complete Specification
05 Apr 2018	26339	2-Complete After Provisional Specification - Form 2 Check For No. OF Pages & Claims
05 Apr 2018	26339	12-Request For Early Publication - Form 9
05 Apr 2018	26339	3-Statement & Undertaking - Form 3
05 Apr 2018	26339	28(i)-Request For Examination After 18 months Publication - Form 18
22 Jan 2020	6262	8(i)-Substitution/Change Of Applicant - Form 6
22 Jan 2020	6262	OTHERS(NON CASH)
22 Jan 2020	6262	OTHERS(NON CASH)
22 Jan 2020	6262	FORM 28

नियंत्रक का नाम /Name of the Controller: Dinesh Nath Goswami

नियंत्रक स्थान /Controller Location: Mumbai

टिप्पणी: परीक्षण रिपोर्ट का उत्तर दाखिल करने की अंतिम तिथि / Note: Last date for filing response to the Examination Report: 21/12/2021

20 December 2021

To
Controller of Patents,
The Patent Office,
Chennai – 600 032.

Kind attention of: Shri. Dinesh Nath Goswami
Controller of Patents
Last Date: 21 December 2021

Dear Sir,

Sub : Response to the Examination report in respect of Application No. 201841012997
Ref : Your Examination report dated 21/06/2021
(Request for Examination no. & date - R20184010419 05/04/2018)

We refer to your first examination report letter dated 21 June 2021 in respect of the above-mentioned application and resubmit the documents with amendments for your further consideration.

At the outset, we humbly bring to the Controller's notice that claims of present invention have been suitably amended to overcome the various objections raised by the Controller.

We have furnished below the response for the points noted by the Ld. Controller.

AMENDMENTS MADE IN CLAIMS

1. In view of the objections related to Paragraphs 1 to 3 put forth in the examination report, however, without admitting to the propriety of the objections, we, the Applicant respectfully submits that, the claims have been suitably amended to make them clear, concise, and also submits the revised claims in the prescribed manner which are now in condition of allowance. Revisions in claims are as under:

i) Original independent claim 1 on file is amended by way of incorporating the inventive step, and further amended to make the claim clear, concise, definitive, and clearly define the invention.

ii) Dependent claims 2 – 7 have been amended to make them clear, concise and definitive and replaced with modified claims 2 – 7.

iii) Independent claims have been amended to characterize the inventive features to highlight technical advancement over the prior art documents.

iv) Claims have been amended to provide reference numerals to enhance intelligibility of the claims.

2. Applicant submits that no new matter has been added to any of the pending claims.

3. It is submitted that all the amendments to the claims are directly and unambiguously derivable from the application as originally filed, and therefore meet the requirements of The Patents Act, 1970.

4. In order to facilitate review of the amendments a compared version of the amended set of claims 1 – 7 having the amendments compared to the original version of claims 1-7 are enclosed along with this response. Marked up as well as clean copies of the amended claims are enclosed to this response.

5. All amendments are made without prejudice or disclaimer of subject matter that has been deleted at this stage. The Applicant reserves the right to reintroduce any deleted matter in this application or in a subsequent divisional application.

1 – INVENTIVE STEP:

With regards to objection pertaining to Novelty on claims 1 – 7 in view of:

D1: DE102012009908A1

D2: EP3300949A1 &

D3: WO2017020056A1

Applicant respectfully disagrees that the invention lacks inventive step and being obvious in view of teachings of cited documents u/s 2(1)(j) of the Patent Act, 1970. The Applicant respectfully traverses these grounds of objections as teachings of the referred patent documents are entirely different from this invention. Presented below are arguments in support of Inventive step of the present invention.

It is respectfully submitted that the Applicant has amended independent claims on file, to make the claims clear, concise and clarify the scope of claimed invention. Applicant requests the Controller to kindly consider the amended set of claims presented in the instant response, wherein earlier independent claims have been amended to make it

clear and concise. Presented below are arguments in support of Inventive Step of the present invention.

With regard to the cited document D1:

As per Abstract of the Document D1, the document D1: DE102012009908 discloses "A method involves ***exchanging data*** *between motor cars (F1-F5) using a* ***car-car communication system****, where the* ***data represents illuminating parameters that indicate illumination settings of an illumination system and a position of the motor cars. The illuminating parameters of each motor car are adjusted based on the received data to optimize illumination at traffic conditions****. Information about objects in environment of the motor cars is determined using an environment sensor and incorporated with the illuminating parameters of the motor cars.* ***The illumination parameters are selected from a group consisting of illumination width, illumination angle, illumination direction, illumination height or shape of an illumination area. The data comprises information about a driving road, straight driving condition and driving condition along curves or bends.*** *An independent claim is also included for a device for controlling illumination of traffic conditions caused by vehicles".*

Based on the above document D1 relates to improving the illumination at traffic situation formed by motor vehicles. The invention exchange of data between motor using Car2car communications is provided through **temporary radio network. Each motor vehicle signals traffic information regarding the intended trajectory to the other participating motor vehicles of the traffic situation by setting its lighting parameters.** A device for determining data to be exchanged by means of the Car2Car

communication system is provided. **Said device is used for adapting own lighting parameters using the received data from the other participating motor vehicles to optimize the illumination of the traffic situation.**

In contrast, the present invention relates to **vehicle headlamp beam shifting apparatus to avoid accidents while driving a vehicle at night time.** The invention doesn't improve the illumination at traffic situation formed by motor vehicles. **The communication between the vehicles for automatic headlight beam shifting is achieved using light fidelity (Li-fi)** wherein the document D2 uses a device for Car2car communications provided through temporary radio network. **A sensing device and headlamp control arrangement** is provided to avoid accidents. The document D1 fails to disclose the inventive step used in the present invention.

As a result, the scope of the present invention is completely different as compared to that of D1.

With regard to the cited document D2:

*As per Abstract of the Document D2, the document D2: EP3300949A1 discloses "**A method and system for automatic control of a headlight of a vehicle by a mobile computing device.** The mobile computing device receives vehicle related information and external information associated with the mobile computing device, where **the mobile computing device is associated with an operator of the vehicle and is communicatively coupled with vehicle.** Further, the mobile computing device computes an intensity and an orientation of a headlight of the vehicle based on one or more vehicle lighting patterns, where said vehicle lighting patterns are generated*

based on behavior of the headlight of the vehicle, which is operated by the operator, for a pre-defined duration in association with the vehicle related information and external information and provides computed intensity and orientation of the headlight of the vehicle to a lighting control module of the vehicle for automatic control of the headlight of the vehicle.

The document D2 provides a method for **personalized automation of headlights of the vehicle for the users and to transfer the same while driving different vehicles.** Said personalized automation is provided using a mobile computing device. The vehicle and mobile computing device are communicatively coupled through a communication network. The mobile computing device includes a smartphone, a tablet and any other computing devices.

In contrast, the present invention provides **an automatic switching between headlights from high beam to low beam in vehicles to avoid accidents** wherein the document D2 provides a method for personalized automation of headlights of the vehicle for the users and to transfer the same while driving different vehicles. There are no mobile computing devices such as smartphone or interface device used for automatic switching of headlights. The invention proposes a **light fidelity (Li-fi) based headlamp beam shifting apparatus in vehicles.** The present invention doesn't utilize mobile communication device for automatic control of headlight of the vehicle according to the user preference which is the essential feature of the document D2.

As a result, the scope of the present invention is completely different as compare to that of D2.

With regard to the cited document D3:

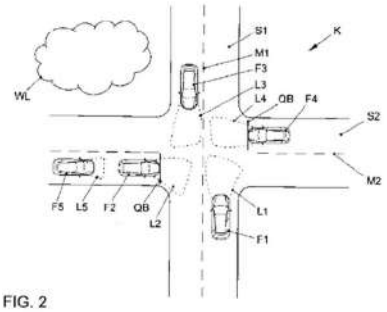
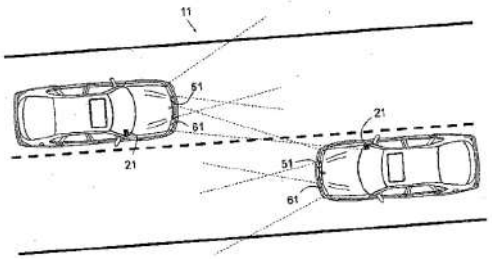
*As per Abstract of the Document D3, the document D3: WO2017020056A1 discloses "**An adjusting system for a lighting apparatus for vehicles**, which lighting apparatus (1) is **set up to emit light for forming at least one, preferably dynamic, light distribution (3) described by a parameter set (2) into an area in front of the lighting apparatus (1),** wherein the adjusting system is set up to modify the at least one light distribution (3) described by the parameter set (2), and wherein the **adjusting system comprises a light controller (4),** which light controller (4) stores the parameter set (2) describing the light distribution (3), and which light controller (4) is associated with the lighting apparatus (1) and is set up to control the lighting apparatus (1) such that the lighting apparatus (1) emits light for forming the at least one light distribution (3) in accordance with the parameter set (2) into an area in front of the lighting apparatus (1), wherein **the light controller (4) has an associated operator control unit (5) formed separately from the lighting apparatus (1)** and the light controller (4), which operator control unit (5) is set up to accept user inputs (6) and to transmit the user inputs (6) to the light controller (4), wherein the light controller (4) is set up to modify the parameter set (2) to produce a further parameter set (8), in accordance with the user inputs (6), that describes at least one further user-defined, preferably dynamic light distribution (7) compliant with legal standards, and to adjust the lighting apparatus (1) such that the lighting apparatus (1) emits light for forming the at least one further light distribution (7) in accordance with the further parameter set (8) into an area in front of the lighting apparatus (1)".*

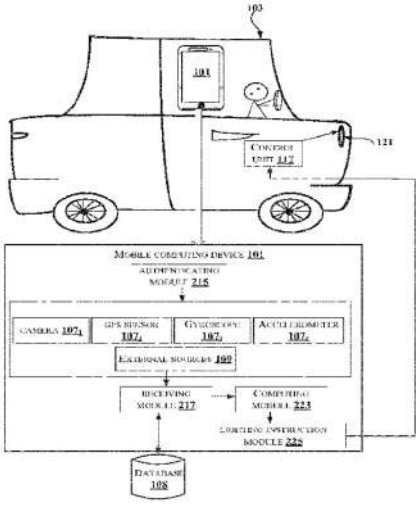
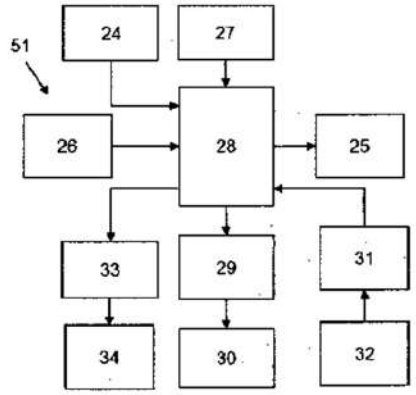
Based on the above and the whole document D3 aim is to **provide the vehicle user to generate self-defined light distributions taking into account the technical limit**

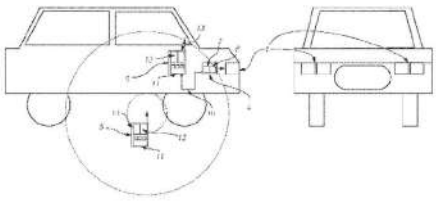
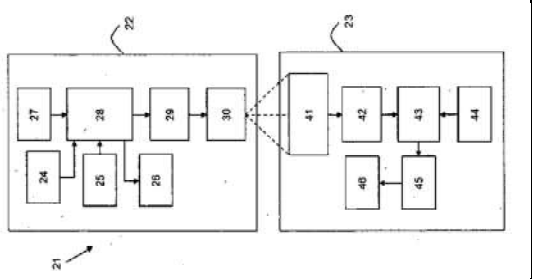
values and legal standards and to adapt the existing light distributions individually. The operator control unit is a portable terminal device preferably a mobile phone, in particular a smartphone, or a laptop, in particular a notebook, or a tablet.

In contrast, the present invention aims to avoid accidents caused due to highly focused headlamp of vehicles while opposite crossing of each other during night time. **A sensing device, a headlamp control arrangement and motorized lamp turning unit is provided for the vehicles to avoid accidents occurring due to light beam from opposite vehicles.** The invention doesn't generate self-defined light distributions taking into account the technical limit values and legal standards and to adapt the existing light distributions individually. The document D3 fails to disclose the communication method used in the present invention.

<u>As a result, the scope of the present invention is completely different as compare to that of D3.</u>

	PRIOR ART DOCUMENTS	INVENTION
D1	**<u>D1: DE102012009908</u>**  FIG. 2 The illumination at traffic situation at intersection (K) is controlled for	 There is no traffic situation based controlled illumination for vehicle. But provides a headlamp beam shifting

	plurality of vehicles (F1, F2, F3, F4 and F5) with respective plurality of front light cones (L1, L2, L3, L4 and L5) by means of car2car communication via the temporary radio network (WL).	apparatus (11) consisting of a sensing device (21), a headlamp control arrangement (51) and motorized lamp turning unit (61).
D2	**D2: EP3300949A1**  Fig.2b The invention discloses a method and system for automatic control of headlight of a vehicle (103). A mobile computing device (101) consists of plurality of sensors (107) and is placed within the vehicle (103). The personalized automation of headlight is provided even if the different vehicle is used by a user.	 FIG 3 The present invention does not provide any personalized automation of headlight using mobile computing device. A Lifi based vehicle headlamp control arrangement (51) is provided. Said arrangement (51) consists of light dependent resistor sensor (24), radar speed gun (25), LED lamp turning motor (26), inbuilt power supply (27), microcontroller (28), lamp driver (29), LED lamp (30), amplifier and processor (31), photo detector (32), relay circuit (33) and a set of vehicle head lamp (34).

D3	**D3: WO2017020056A1**  The invention proposes an adjusting system for a lighting apparatus for vehicles. A lighting device (1) is switched during operation by means of the light control device (4). An operating unit (5) is provided which is assigned to the light control device (4). Said operating unit (5) consists of an input means (11), an executable application program (12) and output means (13).	 There is NO adjusting system for lighting apparatus proposed in the present invention. The invention uses sensing device (21). Said sensing device (21) comprises of signal transmitting unit (22) and signal receiving unit (23).

Based on the above arguments and differences, the Applicant submits that:

a) D1-D3 explicitly fails to disclose atleast the features mentioned in the above paragraphs and tabular columns.

b) In addition, the technical problem being solved by the present invention is technically and logically different from that of the technical problem being solved by the cited prior art reference D1-D3.

c) Further, the technical effect solution provided by the present invention is technically and logically different from the technical problem being provided by the cited prior art document D1-D3, even if considered individually or in combination with other(without any teaching, suggestion and/or motivation).

Hence unless the reference, for example each of the cited reference D1-D5, explicitly and individually discloses the above recited inventive steps/feature/component of independent claim 1 in individually and/or in combination, and the manner in which they are constructed/arranged/structured, the objection of INVENTIVE STEP cannot be applicable.

The Applicant respectfully asserts that D1 to D3 fails to teach each element of amended independent claim 1, and consequently fails to anticipate the claims 1 and 7. Also, by virtue of their dependencies on the novel and inventive independent claim, the respective dependent claims 2-7 shall also be considered Inventive.

Consequently, the subject matter of the independent claim 1, involves inventive step over D1-3. Hence, a favorable consideration is therefore requested in view of this submission and revision, and therefore requests the learned Controller to withdraw the present objection.

Accordingly, the Applicant therefore requests the Learned Controller to withdraw the present objection.

2 - UNITY OF INVENTION:

It is mentioned that, Claim(s) 1,7 lack(s) unity of invention as the claims do not relate to a single invention or to a group of inventions linked so as to form a single inventive concept. Also, it is mentioned that the specification consists multiple independent claims 1 and 7 and these claims defines a plurality of distinct inventions and the various definitions of the subject matter mentioned in the claims 1, 7 make it difficult

to determine the matter for which protection is being sought. Thus, the claims as a whole are not clear and not concise, and the requirement of section 10(5) of the Act is not met. Hence claims should be linked in such a way that they form a single inventive concept.

The claim 1 is modified in a manner to characterize the Inventive step and the essential inventive step is mentioned in the characterized portion. The claim 7 is modified and drafted as a method claim and said claim 7 describes the method of working of the invention in clear and concise manner. Thus, the claim 1 and claim 7 are linked to describe a single inventive concept. The claims 1 to 7 of the invention are replaced with modified claims 1 to 7 and the original Pages 16 to 18 are replaced with freshly typed pages 16 to 18. Therefore, the Applicant respectfully requests the learned Controller to withdraw the present objection regarding unity of invention.

4 - SUFFICIENCY OF DISCLOSURE:

Abstract is prepared in accordance with the instructions contained in the rule 13(7) of the Patent Rules, 2003(as amended). The Abstract in page 19 is replaced with modified Abstract in page 19.

5 – CLARITY AND CONCISENESS:

The independent and dependent claims are modified and drafted in a manner to characterize the novel and inventive features in the principal claim rather than doing so in the dependent claims. The claims 1, 7 of the invention are replaced with modified claims 1, 7 and the original Pages 16 to 18 are replaced with freshly typed pages 16 to 18.

PART 3 – FORMAL REQUIREMENTS:

- The blank space in the specification is scored out.
- Latest Form 3 has been filed along with this reply.
- The Forms are prepared and filed along with Complete specification.

  Therefore, Application numbers were not mentioned in Form 3, 9 and 18.

Conclusion

Applicant submits the reply in view of the office action. Applicant believes to have overcome all objections mentioned in the examination report and believe that the application is now in condition for allowance. The Ld. Controller of Patents is respectfully requested to take on record the reply statement. We, the applicant pray that, the application may be accepted if found in order and due intimation given to us. The receipt of this communication and the enclosures may also be kindly acknowledged.

Thanking you,
Yours faithfully,



AMIRTHALINGAM JOTHIMURUGAN
MANAGING PARTNER
ROBOTEX (Applicant)

Encl:

1. Complete specification – fresh typed page 15
2. Modified Claims – fresh typed 3 pages.
3. Modified Abstract – fresh typed 1 page.
4. Marked copy of pages 15 to 19.
5. Latest Form 3.

700314847

CBR : 2245
Date : 22:01:2020
Amt, 8801-

22/1/2020

FORM-6

THE PATENT ACT, 1970

(39 of 1970)

CLAIM OR REQUEST REGARDING ANY CHANGE

IN APPLICANT FOR PATENT

[See sections 20(1), 20(4) and 20(5) and

rules 34(1), 35 and 36]

1. We, **ROBOTEX** an Indian Registered Startup having office at, 4/28 A, Rajalakshmi Nagar, Lakshmipuram, Peelamedu, Coimbatore - 641004 Tamil Nadu, India

   hereby request that the application for patent No. 201841012997 dated April 05, 2018 made by **AMIRTAHLINGAM JOTHIMURUGAN** may proceed in our name and further request that direction of the Controller be made in that effect.

2. Reasons for making the above are as follows:-

   The applicant on record **AMIRTAHLINGAM JOTHIMURUGAN** have assigned by deed of assignment dated 20th Day of January 2020, its entire right, title and interest in and to the said invention in favour of **ROBOTEX**, and the said application, all divisionals thereof and all Letters Patent which may be granted thereon be in favour of the assignee, the entity making the request herein.

3. We furnish the following document(s) in support of our above request.

   A notarially attested true copy of said deed of Assignment dated 20th Day of January 2020 from **AMIRTAHLINGAM JOTHIMURUGAN** to **ROBOTEX.**

4. Our address for service in India is:-

   ROBOTEX,
   4/28 A, Rajalakshmi Nagar,
   Lakshmipuram,
   Peelamedu,
   Coimbatore - 641004
   Tamil Nadu,
   India

Dated this 20th day of January 2020.

A.Jothi Murugan
Managing Partner
For ROBOTEX
(Applicant)

To
The Controller of Patents,
The Patent Office,
Chennai.

PATENT OFFICE CHENNAI 24/01/2020 14:33

22-Jan-2020/6262/201841012997/Form 6

speed of the approaching vehicle and send the data to the microcontroller. The microcontroller process the signal from radar speed gun and sends the signal to lamp turning motor according to vehicle speed. Lamp turning motor turns the lamp based on the information from microcontroller. Once the receiving signal is disconnected, the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position. The process is completed when receiving signal is disconnected from light dependent resistor (LDR) sensor.

In view of the present disclosure which describes preferred and best modes for providing an apparatus for mounting and dismounting the luminescent devices. Modifications and variations would present themselves to those skilled in the art without departing from the scope and spirit of this invention. Any modifications and variations coming within the meaning and range of equivalency are considered within the scope.

~~Dated 04th day of April 2018.~~

WE CLAIM:

1. A headlamp beam shifting apparatus (11) for vehicles, said beam shifting in comprising of a vehicle (2) and another opposite vehicle (3) with t least head lamp beam (4) a **characterized in that,** said head lamp beam (4) is shifted using a headlamp beam shifting apparatus (11) and said headlamp beam shifting apparatus (11) consists of a sensing light beam sensing device with vehicle speed detection apparatusdevice (21), a headlamp control arrangement (51) and a motorized lamp turning unitsignal transmission and light beam shifting arrangement (61) and light signal receiving and processing system (51), and a motorized lamp turning system (61) **wherein** the signals are transferred to the opposite vehicle through LiFi based wireless communication system.

1.

2. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein,** said vehicle headlamp beam shifting systemsensing device (21) comprises of two major units such as signal transmitting unit (22) and signal receiving unit (23).

3. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** saidthe signal transmitting unit (22) comprises consists of a light dependent resistor sensor (24), a radar speed gun (25), a lamp turning

motor (26), an inbuilt power backup (27), a microcontroller (28), a lamp driver (29), and an LED lamp (30).

4. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** the said signal receiving unit (23) comprises consists of a photo detector (41), an amplifier and a processor (42), a microcontroller (43), an inbuilt power supply (44), a relay circuit (45) and, vehicle headlamp (46).

5. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein**, said headlamp control arrangement the LiFi based vehicle headlamp control arrangement (51) connmprisiests of a light dependent resistor sensor (24), a radar speed gun (25), an LED lamp turning motor (26), an inbuilt power supply (27), a microcontroller (28), a lamp driver (29), an LED lamp (30), an amplifier and processor (31), a photo detector (32), and a relay circuit (33) which are connected with a set of vehicle head lamps (34).

6. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** said motorized lamp turning unit the Lamp turning system (61) comprises of a motor (26), shaft (62), Lamp fixing holder (63), LED lamp (30) and lamp mounting cover (64).

6.

7. The method of working of headlamp beam shifting apparatus, said method (11) comprisesing the steps of;

- SensingThe light dependent resistor senses the intensity of light beam (4) received from the opposite vehicle (3) by light dependent resistor (24) of sensing device (21) and the sensed signal is sent to the microcontroller (28) for processing;
- Analyzing the light intensity level by the mMicrocontroller (28) of light signal and receiving unit (21) checks the light intensity level and compares the value from the standard parameters;
- Sending signal to a lamp driver (29) for reducing the light beam of opposite vehicle (3) by the controller (28) ifIf the sensor received the hHigh beam of light is determined;
- , the controller sends the signal to lamp driver for reducing the light beam of opposite vehicle and the lamp driver Cconverting an s electrical signal into a binary signal by the lamp driver (29) and it is sendst signal to the vehicle (2) head lamp and saidthe vehicle head lamp transmitsfer athe signal to the opposite vehicle (3) through light;
- Receiving transmitted light through the pPhoto detector (41) ofin the signal receiving unit (23) present in the opposite vehicle (3) receives the light signal and said light is it is processed by transferred to amplifier and processor (42) to process the signal from photo detector and sent sends the signal to the vehicle microcontroller (43);
- Sending The Microcontroller sends the signal to relay circuit (45) from the microcontroller (42) for reducing the light beam intensity and the relay circuit controls and regulates the light beam intensity according to the information from said microcontroller (42);.

- Activating ~~Microcontroller also activates~~ the radar speed gun simultaneously by microcontroller (42) to measure the speed of the vehicle (4) and said microcontroller (42) ~~the microcontroller process the signal from radar speed gun and~~ sends a~~the~~ signal to lamp turning motor (26) according to vehicle speed for~~;~~ ~~the Lamp turning motor~~ turning~~s~~ the LED lamp (30) based on the information from microcontroller (42);~~.~~
- Sending a signal to lamp turning motor (26) by the microcontroller (42) to turn the LED lamp (30) to its original position when ~~Once~~ the receiving signal is disconnected from vehicle (2)~~,~~.

~~the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position.~~

Dated this 4th day of April 2018

AMIRTHALINGAM JOTHI MURUGAN
ROBOTEX
COIMBATORE – 641004
(APPLICANT)

ABSTRACT

HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME

The present invention relates to the field of vehicle headlamp high beam shifting apparatus using light fidelity (LiFi) to avoid accidents while driving a vehicle at night time. A head lamp beam (4) is shifted using a headlamp beam shifting apparatus (11) and said headlamp beam shifting apparatus (11) consists of a sensing device (21), a headlamp control arrangement (51) and a motorized lamp turning unit (61). The method of shifting consists of sensing and analyzing the light, sending and receiving signals to shift and reduce the headlamp high beam disturbance for opposite vehicle. ~~Headlamp beam shifting apparatus (11) for vehicles comprising of at least a light beam sensing device with vehicle speed detection apparatus (21), signal transmission and light beam shifting arrangement (61) and light signal receiving and processing system (51) and a motorized lamp turning system (61) wherein the signals are transferred to the opposite vehicle through LiFi based wireless communication system.~~

FIG – 1

~~**AMIRTHALINGAM JOTHI MURUGAN**~~
~~**COIMBATORE – 641035**~~
~~**(APPLICANT)**~~

D.No. 66286

200307893

"FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and sub-rule (1) of rule 20)	(FOR OFFICE USE ONLY)

1750/- रुपये नकद/चेक/मनी ऑर्डर द्वारा	Application No.	202121054459
CBR संख्या 27109 दि. 25/11/2021	Filing date:	25/11/2021
प्राप्त किया गया।	Amount of Fee paid:	1750/-
	CBR No:	27109
रोकड़िया	Signature:	

1. APPLICANT'S REFERENCE /IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)	

2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]

Ordinary (✓)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition (✓)	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

3A. APPLICANT(S)

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भारत सरकार, पेटेन्ट कार्यालय मुंबई
25 NOV 2021
GOVT. OF INDIA, PATENT OFFICE MUMBAI

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			City	Padalam, Chengalpattu District
			State	Tamil Nadu
			Country	India

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			Pin code	603 308

3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]			
Natural Person (✓)	Other than Natural Person		
	Small Entity ( )	Startup ( )	Others ( )

4. INVENTOR(S) [Please tick (✓) at the appropriate category]		
Are all the inventor(s) same as the applicant(s) named above?	Yes (✓)	No ( )

If "No", furnish the details of the inventor(s)

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			Pin code	07642
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			Country	India
			Pin code	678 557
Name in Full	Nationality	Country of Residence	Address of the Inventor	
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			Street	Karpaga Vinayaga College of Engineering and Technology
			City	Padalam, Chengalpattu District
			State	Tamil Nadu
			Country	India
			Pin code	603 308

5. TITLE OF THE INVENTION: AN IoT BASED FACE MASK VENDING MACHINE.

~~6. AUTHORISED REGISTERED PATENT AGENT(S)~~	~~IN/PA No.~~	
	~~Name~~	
	~~Mobile No.~~	
7. ADDRESS FOR SERVICE OF APPLICANT IN	Name	Mr. VIPUL AJIT SANSARE

IPO MUMBAI 25-11-2021 16:46

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	Mobile No.	+ (91) - 9787621854
	Fax No.	
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~~8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION~~

Country	Application Number	Filing date	~~Name of the applicant~~	~~Title of the invention~~	~~IPC (as classified in the convention country)~~

~~9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)~~

~~International application number~~	~~International filing date~~

~~10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION~~

~~Original (first) application No.~~	~~Date of filing of original (first) application~~

~~11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT~~

~~Main application/patent No.~~	~~Date of filing of main application~~

12. DECLARATIONS

IPO MUMBAI 25-11-2021 16:46

(i) **Declaration by the inventor**

(**In case the applicant is an assignee**: the inventor may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

I, the above-named inventor is the true & first inventor for this Invention and declare that the applicant herein is my assignee or legal representative.

(a) Date: 23.11.2021

(b) Signature:

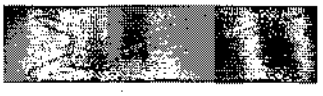
(c) Name: Mr. VIPUL AJIT SANSARE

(a) Date: 23.11.2021

(b) Signature:

(c) Name: PRADIP C

(a) Date: 23.11.2021

(b) Signature: 

(c) Name: SAJU N

(a) Date: 23.11.2021

(b) Signature:

(c) Name: PREMKUMAR CHELLAIPILLAI MURUGAIYAN

(a) Date: 23.11.2021

(b) Signature:

(c) Name: MURUGANANTH GOPAL RAJ

IPO MUMBAI 25-11-2021 16:46

(a) Date: 23.11.2021



(b) Signature:

(c) Name: S. PARASURAMAN

~~(ii) Declaration by the applicant(s) in the convention country~~

~~(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)~~

~~I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.~~

~~(a) Date~~

~~(b) Signature(s)~~

(c) ~~Name(s) of the signatory~~

IPO MUMBAI 25-11-2021 16:46

(iii) Declaration by the applicant(s)

We the applicant(s) hereby declare(s) that: -

We are in possession of the above-mentioned invention.

The provisional/complete specification relating to the invention is filled with this Application.

- ☐ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us-NA
- ☐ There is no lawful ground of objection(s) to the grant of the Patent to me/us. - NA
  We are the true & first inventor(s).
  We are the assignee or legal representative of true & first inventor(s).
- ☐ The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my/our invention(s)-NA
  We claim the priority from the above-mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which We derive the title.
- ☐ My/our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9- NA
  The application is divided out of my /our application particulars of which is given in Paragraph-10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act
- ☐ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11 – NA

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete/ provisional specification) #	No. of pages - One		
No. of Claim(s)	No. of claims Five and No. of pages – One		
Abstract	No. of pages - One		
No. of Drawing(s)	No. of drawings and No. of pages – Nine and Six		

IPO MUMBAI 25-11-2021 16:46

In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

(b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(c) Sequence listing in electronic form

(d) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service) if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.

(f) Translation of priority document/Specification/International Search Report/International Preliminary Report on Patentability.

(g) Statement and Undertaking on Form 3

(h) Declaration of Inventorship on Form 5

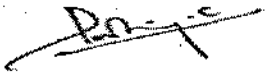
(i) Power of Authority

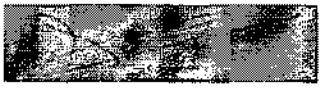
(j).....

Total fee Rs. 4,500.00 in bearing Demand Draft No. 212855 Dated 23.11.2021 drawn on Axis Bank, Nanganallur Branch.

I hereby declare that to the best of my knowledge, information and belief the fact and matters slated herein are correct and I request that a patent may be granted to me for the said invention.
Dated this Wednesday of 23rd of November 2021

(a) Signature:
(b) Name: Mr. VIPUL AJIT SANSARE

(a) Signature: 
(b) Name: PRADIP C

(a) Signature: 
(b) Name: SAJU N

IPO MUMBAI 25-11-2021 16:46

(a) Signature:
(b) Name: PREMKUMAR CHELLAIPILLAI MURUGAIYAN

(a) Signature:
(b) Name: MURUGANANTH GOPAL RAJ

(a) Signature:
(b) Name: S. PARASURAMAN

To,
The Controller of Patents
The Patent Office, at Antop Hills, S.M Road, Mumbai – 400 037.

Note: -

* Repeat boxes in case of more than one entry.
* To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
* Tick (✓)/cross (x) whichever is applicable/not applicable in declaration in paragraph-12.
* Name of the inventor and applicant should be given in full, family name in the beginning.
* Strike out the portion which is/are not applicable.
* For fee: See First Schedule";

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200307895

THE GAZETTEE OF INDIA – EXTRAORDINARY [PART II—Sec 3(ii)]

FORM 2
THE PATENT ACT 1970
(39 of 1970)
&
The Patents Rules, 2003
PROVISIONAL/COMPLETE SPECIFICATION
(See Section 10 and Rule 13)

COMPLETE

AN IoT BASED FACE MASK VENDING MACHINE.

1. APPLICANT

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The following specification particularly describes the invention and the manner in which it is to be performed

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Field of Invention

Green buildings are a game-changing technique for creating a more sustainable and environmentally friendly environment. According to the Indian Green Building Council, their present norm is sophisticated process management and control with advanced warning systems and sustainable user-friendly structures. These optimised building spaces minimise various usage expenses while simultaneously boosting safety, cleanliness, and comfort standards, thanks to effective resource utilisation and waste management, as well as numerous user-friendly working technologies. Their future standards focus on a sustainable development programme that incorporates a variety of renewable energy sources, with solar energy emerging as a popular option due to its adaptability to a variety of rural and urban settings. The advanced Voice Recognition System (VRS) alters the role of people in the related process and, as a result, should be included in future green buildings. Machine Learning (ML) incorporates intelligence into the operating system, and its adaptable Internet of Things (IoT) platform includes high customizability and a good Prognostics & Health Management (PHM) media.

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Background of Invention

Using Artificial Intelligence and Internet of Things technologies, the idea offers a smile-activated vending machine. The market for interactive electric items is increasing at a steady pace. To do so, we're attempting to link Artificial Intelligence to a vending machine, where the user's grin activates the vending machine's output using IoT technology. The main purpose of our project is to promote new technical applications into society and to distribute smiles while purchasing chocolate, as we all know that smile is the messenger of our soul's happiness. The majority of people throughout the world are currently sad. Using Artificial Intelligence and Internet of Things technologies, the idea offers a smile-activated vending machine. The market for interactive electric items is increasing at a steady pace. To do so, we're attempting to link Artificial Intelligence to a vending machine, where the user's grin activates the vending machine's output using IoT technology. The main purpose of our project is to promote new technical applications into society and to distribute smiles while purchasing chocolate, as we all know that smile is the messenger of our soul's happiness. The majority of people throughout the world are currently sad.

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Object of Invention

1. Battery
2. Microcontroller
3. ESP 8266
4. Blynk application
5. Gsm
6. GPS
7. Coin sensor

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Summary of Invention

The contagious virus that spreads quickly among people through intimate contact with COVID-19 positive individuals is the key healthcare problem in COVID-19. Before its appearance in December 2019, this unique pathogen and illness were unknown. COVID19 has now become a global epidemic impacting all countries. COVID-19 infection can result in a wide range of symptoms, ranging from moderate to severe sickness. COVID-19 symptoms might occur anywhere from two to fourteen days following exposure to the virus. Asymptomatic carriers are persons who exhibit mild or no symptoms while being sick. Asymptomatic carriers are dangerous, and it's difficult to track them down.

COVID-19 may spread in three ways: direct/indirect contact, droplet spraying for short-range transmission, and aerosol spraying for long-range transmission, also known as airborne transmission. Short-range transmission allows the virus to pass from person to person by droplets from the nose or mouth, but coughing and sneezing prevent COVID-19 infection. These droplets can fly up to 1.8 metres (6 feet) before crashing to the earth. These droplets cling to objects and surfaces, such as table handles or railings. Humans can contract the disease by touching these things and then contacting their eyes, nose, or mouth.

Close contact between people is the most common way for COVID-19 to spread. People who are asymptomatic are more susceptible than those who have COVID-19 symptoms. Another way for this virus to spread is for people to touch a surface or object that has a virus on it, and then touch their mouth, nose, and eyes, resulting in infection. COVID-19 also reported that the virus could spread from animal to human and vice versa, but the chances of this happening are slim. They also have evidence that the virus is passed from people to pets, and that individuals who have intimate contact with their pets are infected with COVID-19.

The Internet of Things (IoT) and Artificial Intelligence (AI) have altered living standards and ushered in a healthcare paradigm shift. The IoT and AI healthcare systems have evolved from traditional healthcare systems, lowering the cost of healthcare and increasing its reliability. Smart cities, smart security systems, and smart grids are just a few of the systems and technological disciplines where IoT applications are deployed. Healthcare systems and technology have a long history.

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Detailed Description of Invention

This prototype device can be divided into two parts. They are Node Unit and the Hub Unit. The functionality of the Node unit is as follows.

When the power is connected to the controller the prototype starts functioning. There are two inputs and two outputs to this controller in the node unit. They are coin sensor, GPS module, Mask Vendor, GSM Module. A battery consists of one or more electrochemical cells with external electrical equipment such as torches, mobile phones, and electric vehicles. If a battery provides electric power, the cathodic terminal is positive, and the anode is negative. Then a microcontroller is a compact integrated circuit designed to govern a specific operation in an embedded system. A typical microcontroller includes a processor, memory and input/output (I/O) peripherals on a single chip. To control the overall operation of the modules like a CPU of a computer

The sensors in this coin acceptor use the thickness, diameter and fall time of the coins to identify them and it's fully programmable so you're not limited to any particular type of currency. Simply use the buttons and 7-segment display on the side of the unit to select a coin profile, insert a bunch of coin samples (or the same one, over and over) then designate the value. After you've programmed the coin profiles, simply read the serial output of the coin acceptor and it will tell you the value of each coin as they're inserted. It reports these values as binary bytes and the baud rate is selectable on the unit.

The GPS receiver gets a signal from each GPS satellite. The satellites transmit the exact time the signals are sent. By subtracting the time, the signal was transmitted from the time it was received, the GPS can tell how far it is from each satellite. This module is mainly used to track the location of water in various hilly tracks or tributaries.

A GSM modem duly interfaced to the MC through the level shifter IC Max232. The SIM card mounted GSM modem upon receiving digit command by SMS from any cell phone sends that data to the MC through serial communication. This module is used to send a SMS to the authorities if the water's contaminated value is above the threshold, for pro-active purposes. The ESP8266 Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. It is mainly used to connect the advertising board module to a

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connection of multiple networks. So that an information can be wirelessly transmitted from the server to client.

The hub unit of Number of nodes. They are connected to the Central Server. The server can be used only if it is connected with the Wi-Fi Module. This is they used in the smartphone through the Blynk App. From this the data's can be fetched at any given time.

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Detailed Description of Drawings

(1) Figure (i) shows the Block Diagram

(2) Figure (ii) shows the Hub Unit

(3) Figure (iii) shows the Battery

A battery consists of one or more electrochemical cells with external electrical equipment such as torches, mobile phones, and electric vehicles. If a battery provides electric power, the cathodic terminal is positive, and the anode is negative.

(4) Figure (iv) shows the Microcontroller

A microcontroller is a compact integrated circuit designed to govern a specific operation in an embedded system. A typical microcontroller includes a processor, memory and input/output (I/O) peripherals on a single chip.

(5) Figure (v) shows the ESP8266

The ESP8266 Wi-Fi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. It is mainly used to connect the advertising board module to a connection of multiple networks. So that an information can be wirelessly transmitted from the server to client

(6) Figure (vi) shows the Blynk application

Blynk is a new platform that allows you to quickly build interfaces for controlling and monitoring your hardware projects from your iOS and Android device. After downloading the Blynk app, you can create a project dashboard and arrange buttons, sliders, graphs, and other widgets onto the screen. User-friendly application in which one can gather the required information as per his product development

(7) Figure (vii) shows the GSM

A GSM modem duly interfaced to the MC through the level shifter IC Max232. The SIM card mounted GSM modem upon receiving digit command by SMS from any cell phone sends that data to the MC through serial communication. This module is used to send a SMS

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to the authorities if the water's contaminated value is above the threshold, for pro-active purposes.

(8) Figure (viii) shows the GPS

The GPS receiver gets a signal from each GPS satellite. The satellites transmit the exact time the signals are sent. By subtracting the time the signal was transmitted from the time it was received, the GPS can tell how far it is from each satellite. This module is mainly used to track the location of water in various hilly tracks or tributaries.

(9) Figure (ix) shows the Coin Sensor

The sensors in this coin acceptor use the thickness, diameter and fall time of the coins to identify them and it's fully programmable so you're not limited to any particular type of currency. Simply use the buttons and 7-segment display on the side of the unit to select a coin profile, insert a bunch of coin samples (or the same one, over and over) then designate the value. After you've programmed the coin profiles, simply read the serial output of the coin acceptor and it will tell you the value of each coin as they're inserted. It reports these values as binary bytes and the baud rate is selectable on the unit.

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Different Embodiment of Invention

i. As vending machines have already been popularized in countries such as Japan, the USA, and the UK, growing health concerns and the global spread of diseases such as COVID-19 has made them a necessity rather than a luxury.

ii. With work underway on the development of a working physical model, the voice-enabled vending machine design incites interest in various fields of business, technology, and academia.

iii. The Microcontroller Web system provides the users with high customizability wherein one can use any additional setup as per her or his requirement.

iv. Adding to the existing framework, with more powerful microcontrollers, better knowledge of Machine Learning, and the development of solar technology along with other forms of renewable energy, it can be used in even more complex environments with longer life for multiple elaborate tasks that allow classification and feature extraction.

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Application of Invention

a. As a precautionary measure against the spread of the COVID-19, we will propose a deep learning framework that uses pre-trained deep learning models to monitor the physical interaction (social distancing) between individuals in a real-time environment.

b. A clear transparent face mask should also be considered by anyone with a hearing impairment, according to the CDC (Centers for Disease Control and Prevention).

c. As a result, we'll concentrate on detecting and classifying transparent face masks.

d. COVID-19 has evolved into a pandemic that is quickly spreading through direct and indirect human contact.

e. In homes and public places, manual temperature and disinfection systems are employed, however these systems might constitute a source of COVID-19 infection.

f. This virus will now remain in our life, and we must learn to live with it, but we must take rigorous steps to break the virus's chain.

g. The goal of this study is to stop COVID-19 from spreading by avoiding and decreasing local transmission carriers.

h. Our suggested model is a feasible method for quickly screening and disinfecting a large number of persons using an automated system.

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We Claim

The invention of

1. With more powerful microcontrollers, a better understanding of Machine Learning, and the advancement of solar technology and other forms of renewable energy, it can be used in even more complex environments for multiple elaborate tasks that allow classification and feature extraction, with longer life.

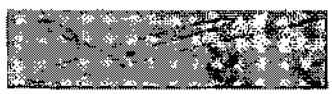
2. Connecting the Raspberry Pi to the internet and constructing a server for numerous payment choices, including card payments and digital wallet transactions, can improve the system.

3. Deep learning methods for identifying face masks and enforcing social separation can be employed in healthcare applications.

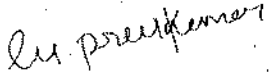
4. Its adaptable solutions improve process efficiency while lowering human intervention, all while maintaining high levels of cleanliness and user pleasure, which is the fundamental goal of a Green Building Environment. The machine may perform various functions while consuming minimum space and resources.

5. As a result, such systems may be adapted to be utilised in a variety of locations, including residential buildings, workplaces, malls, roadways, airports, and hospitals, depending on the requirements.





(Mr. VIPUL AJIT SANSARE) (PRADIP C) (SAJU N)




(PREMKUMAR CHELLAIPILLAI MURUGAIYAN) (MURUGANANTH GOPAL RAJ)

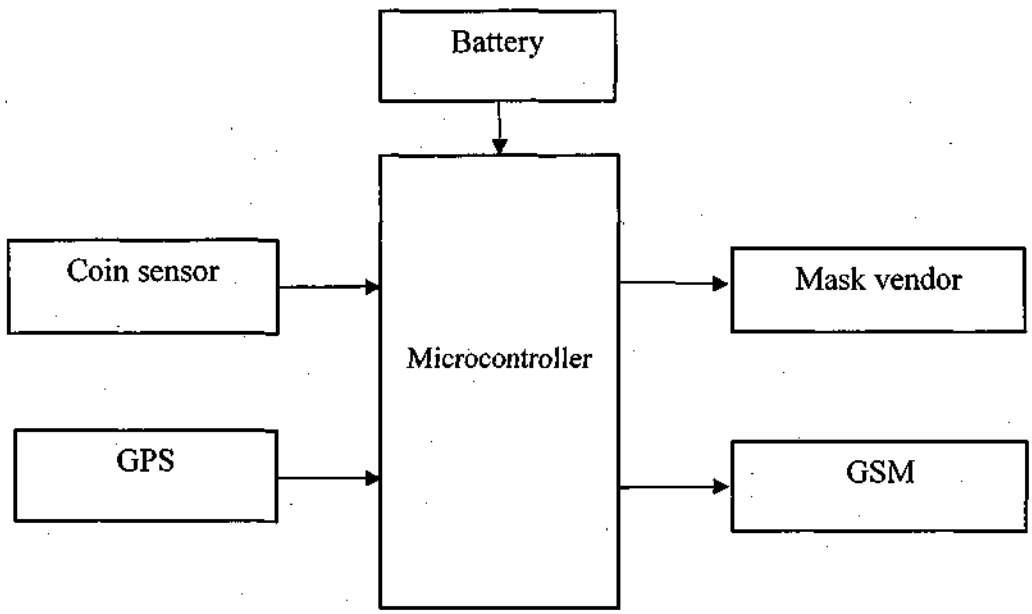


(S. PARASURAMAN)

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Drawings

BLOCK DIAGRAM:



5 Figure (i) shows the Block Diagram

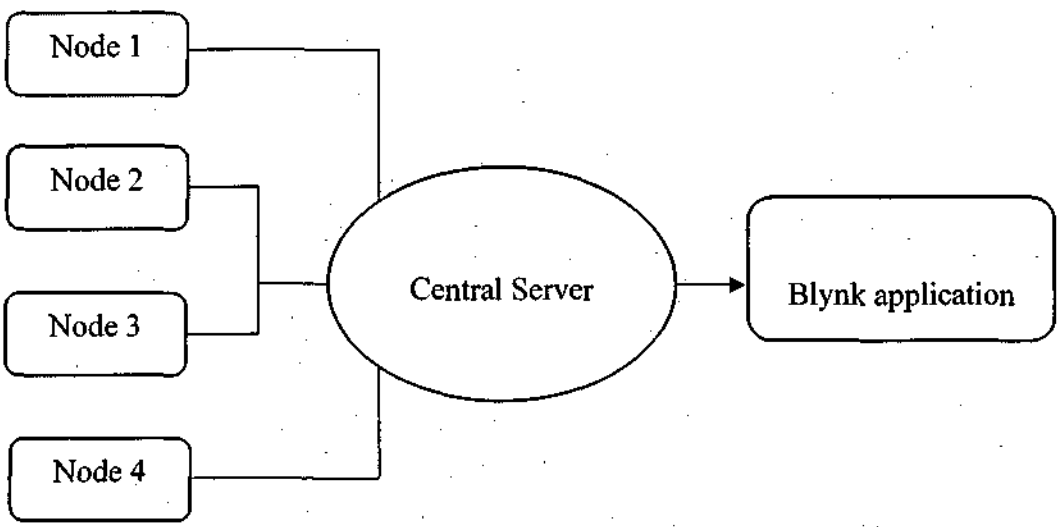


Figure (ii) shows the Hub Unit

IPO MUMBAI 25-11-2021 16:46



Figure (iii) shows the Battery

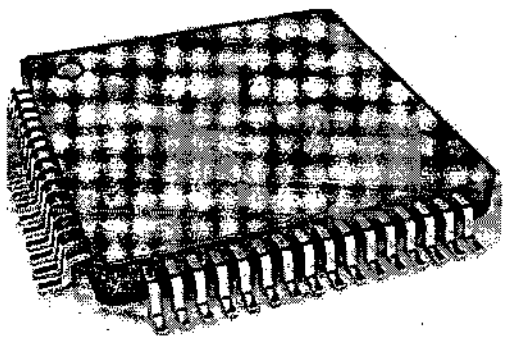


Figure (iv) shows the Microcontroller

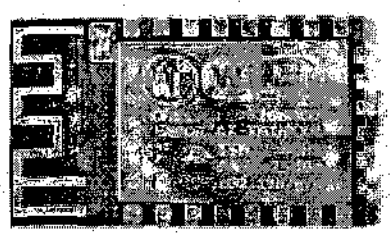


Figure (v) shows the ESP8266

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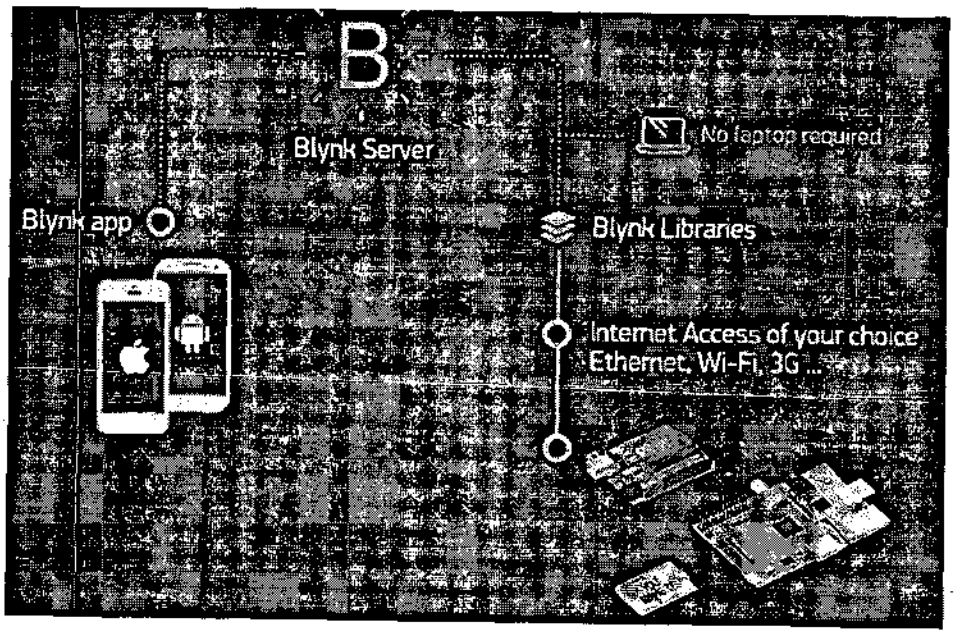


Figure (vi) shows the Blynk Application

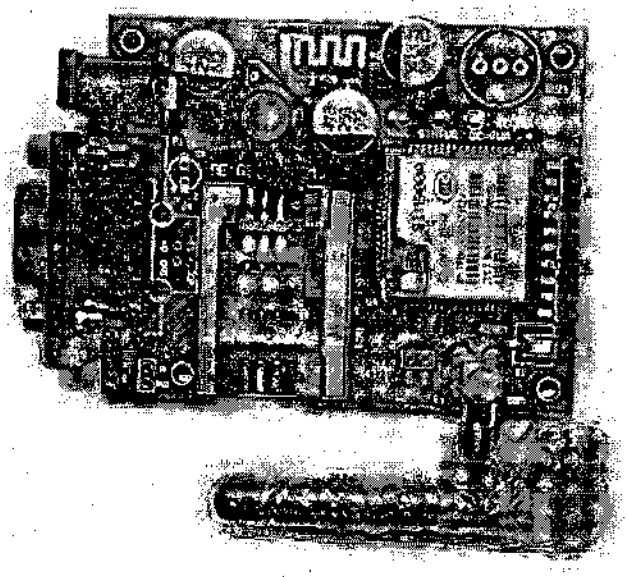


Figure (vii) shows the GSM

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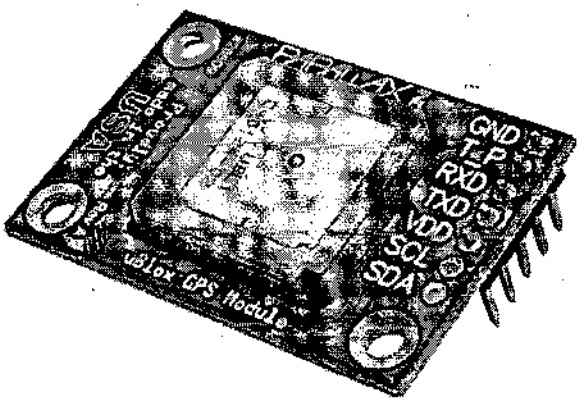


Figure (viii) shows the GPS

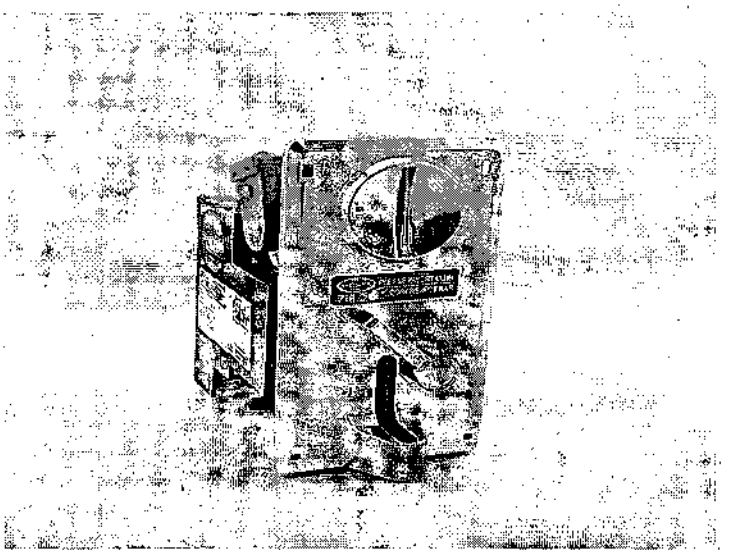


Figure (ix) shows the Coin Sensor

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IPO MUMBAI 25-11-2021 16:46

Abstract

Coronavirus is a genuine pandemic infection proclaimed by WHO. Proficient specialists and medical care units were having the major circumstances everywhere on the world. The public authority additionally finds a way extreme way to get help of the illness, they put lockdown over the nations. In any case, entire shut down will prompts harm on nation's economy. The circumstance is truly crazy along these lines, every one individuals of the nation should wear mask and keep up friendly separating to defeat this issue. The proposed framework gives the automatic face mask vending machine framework utilizing IoT, the system can monitor the amount of mask available in several node which means several areas. By utilizing coin sensor, we can generate the mask to the individual in a packed territory. In case of requirement of mask in a particular node, the amount of mask will be monitored through the IoT in a hub. The proposed framework gives the specific area of the node through GPS innovation.

IPO MUMBAI 25-11-2021 16:46

E-12/2105/2021

200307896

FORM 9
THE PATENT ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
REQUEST FOR PUBLICATION
[See Section 11[2]; rule 24A]

2750/ प्रपत्र नकद/चेक/मनी ऑर्डर द्वारा
CBR संख्या 27109 दि. 25/11/2021
के जमा प्राप्त हुए।

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2. To be Signed by the Applicant Or his authorized registered Patent Agent

hereby request for early publication of our application for Patent No.....dated ..... under section 11A(2) of the Act.
Dated this .....day of .....20.

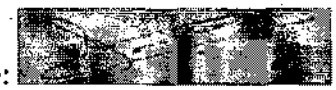
3. Name of the Natural Person Has signed

(a) Signature:

IPO MUMBAI 25-11-2021 16:46

(b) Name: Mr. VIPUL AJIT SANSARE

(a) Signature:
(b) Name: PRADIP C

(a) Signature: 
(b) Name: SAJU N

(a) Signature:
(b) Name: PREMKUMAR CHELLAIPILLAI MURUGAIYAN

(a) Signature:
(b) Name: MURUGANANTH GOPAL RAJ

(a) Signature:
(b) Name: S. PARASURAMAN

To

The Controller of Patents,
The Patent Office,
At Guindy, Chennai 600 032.

Note:- For Fee: See First Schedule

IPO MUMBAI 25-11-2021 16:46

Abstract

UAV's for Disaster Hardware. When manmade or natural disasters like a flood or earthquake, etc. happens; it can be extremely dangerous to send first responders in, even though there is an Alerting System Software for people who badly need help. Drones are useful and are helping in the recovery after the disaster, but most require individual pilots, who fly the unmanned aircraft by remote control. That limits how quickly rescuers can view an entire affected area, and can delay actual aid from reaching victims. Autonomous smart drones with integrated image processing APIs that have a longer flight time and can relay real time analysis of images to remote locations will help in early detection and adequate mobilization of resources.

22-Mar-2021/24715/202141012121/Form 2(Title Page)

PATENT OFFICE CHENNAI 23/03/2021 11:59

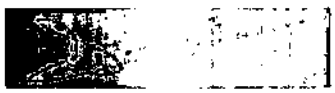
We Claim

This invention of UAV's for Disaster Identification & Alerting System comprises of:

1) Before they can be included in the relief scheme. the decision principles must be tested. Alternative concepts should be described in depth and contrasted. Simulation may be used to render a relative comparison. The simulated damage and information flow may be identical; however, the system's reaction may vary. Several factors influence the outcome, including: • the number of lives saved • the time required to achieve each point • Overall transportation efficiency • Economic loss minimization
2) The simulation is important because a confluence of negative problems could occur—for example, hysteria following an earthquake could block access to the epicentre; an industrial accident could result in "catastrophe tourism"; snow on electronic cables could interrupt the energy supply system; and so on.
3) It is technically necessary to achieve an absolute evaluation. It is essential to develop an optimization model.
4) The model must start with all of the data available at the start of the case. Its effects should be compared to those of the simulation.
5) Unfortunately, the optimization model cannot be used because one of the key challenges in real life is that information on the disaster's impact is not available in real time from the start.
6) Furthermore, it is impossible to save all the lives that could be saved if sufficient assistance was sent to them, since it is impossible to send aid anywhere in time in the event of a major disaster.

(MURUGANANTH GOPAL RAJ)

(PRADIP.C)



(SAJU N)

(Dr . S. V. TRESA SANGEETHA)

22-Mar-2021/24715/2021410121121/Form 2(Title Page)

PATENT OFFICE CHENNAI 23/03/2021 11:59

Field of Invention

Sensitive information and correspondence are involved in the use cases. Information becomes important when networks are down due to typhoons, earthquakes, and other disasters. We were able to demonstrate improved information flow in post-disaster operations by implementing low-cost, easy-to-deploy communications systems. We were able to collect data in real time and measure the transmission range in various terrains. We were able to demonstrate joint missions between ground teams and rescue teams using multiple UAVs. The team's systems increased knowledge flow while avoiding the use of legacy messaging networks. As the market for Unmanned Aerial Vehicles (UAVs) to track natural disasters, defend territories, spray, and maintain vigilance in urban areas grows, detecting safe landing zones is becoming a new field of interest. This paper describes an intelligent device for detecting regions that can be used to navigate a UAV when it needs to land quickly due to technical issues. The proposed system takes advantage of the fact that images with safe regions have flat surfaces that can be extracted using the Gabor Transform. As a result, images of various orientations are generated.

22-Mar-2021/24715/202141012121/Form 2(Title Page)

PATENT OFFICE CHENNAI 23/03/2021 11:59

Background of Invention

The proposed method then uses histogram operations on various Gabor-oriented images to identify pixels that correspond to the highest peak, which are then designated as Candidate Pixels (CP) for the respective Gabor-oriented images. Next, we use Markov Chain Codes (MCCs) to group candidate pixels into a single region. MCCs estimate the likelihood of pixels being labelled as candidates with neighbouring pixels. Candidate Regions (CRs) are discovered as a result of this process. The proposed system finds a candidate region with the highest area for each picture of the respective Gabor orientation, including CRs, and uses it as a guide. Furthermore, the proposed device selects the CR that is most similar to the reference CR to fuse with it, resulting in the creation of secure landing zones for the UAV. For safe landing detection, experimental results on images from various circumstances indicate that the proposed system outperforms existing systems. Furthermore, when compared to current UAV safe landing systems, experimental results on relative success rates for various emergency conditions of UAVs indicate that the proposed intelligent system is successful and useful.

22-Mar-2021/24715/202141012121/Form 2(Title Page)

PATENT OFFICE CHENNAI 23/03/2021 11:59

Object of Invention

(i) For Drone Unit

a) Battery

b) Micro Motor – 4 Nos.

c) Actuator

d) Controller

e) Transceiver Module

f) GPS

g) USB Camera

h) Raspberry PI Module

(ii) For Remote Unit

1. Battery
2. Toggle Key – 2 Nos.
3. Transceiver Module
4. Controller

22-Mar-2021/24715/202141012121/Form 2(Title Page)

PATENT OFFICE CHENNAI 23/03/2021 11:59

Summary of Invention

Many gas leakage disasters have occurred in recent decades around the world, resulting in significant fatalities, collateral damage, and severe social repercussions. The poisonous gas must be correctly identified during evacuation following a gas leakage incident. As a result, the evacuation procedure must be meticulously prepared and communicated to the evacuees. Unmanned aerial vehicles (UAVs) have long been thought to be a promising method for crowd evacuation. We propose a crowd simulation-based UAV control system to guide crowd evacuation from the contaminated area in this paper, with the aim of providing an effective UAV control system for crowd evacuation.

A UAV fleet management module, a UAV trajectory planning module, and a crowd simulation module make up the majority of the design. The design establishes a closed control loop that emphasises the interaction between the actual and simulation scenarios. A case study on scheduling UAV gas leakage detection is presented. The findings indicate that the planned design will provide an effective means of assisting pedestrians in the community in evacuating and avoiding being poisoned by toxic gas. The UAV can be operated by a radio frequency controller and can send live visual feedback that can be controlled by onboard computers or by a pilot on the ground via a remote control. This UAV technology can be used to combat both domestic and foreign border problems in the military.

The surveillance using human body detection and colour pattern recognition is defined here. Any unauthorised access is recorded to the proposed system, along with GPS coordinates that can be used to track down enemies. In the case of a remote-controlled drone, there's a risk that the transmitting portion would be destroyed, resulting in a loss of control over the flight, which could lead to disaster. While a manned aerial vehicle puts the pilots at risk during a crash, a UAV can fly anywhere, including zones where the pilot will be at risk.

The auto pilot was used in conjunction with four brushless DC motors, a GPS module, telemetry, and the receiver when developing the autonomous drone. The entire device was powered by an 18v Lithium Polymer battery in a power module. The device is armed for the flight once it has been powered up and the required configuration and calibrations have been completed. Standard communication interfaces, such as the pulse width modulation (PWM) module, enable the flight controller to communicate with other units. The Pixhawk controller is the best option for autonomous missions. It supports a range of flight modes, including most of the flight modes that require a GPS signal. In 'Return to Launch' (RTL)

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mode, the flight controller records take off coordinates such that in the event of a malfunction, such as a low battery or weak signal, it would automatically return to the point where the flight began. During the arming operation, the auto-pilot tests for fail-safe conditions such as low battery voltage. GPS lock failure, magnetic compass recalibration, and any other sensors. The drone is able to fly after all of the fail-safe checks have been passed.

The programme helps the base station and the UAV to communicate with each other. It's also used to programme commands into a drone, such as returning conditions, GPS coordinates, and altitude points. The software allows the flight controller to fly in a variety of modes, including acrobatic, altitude lock, loiter, and stabilise. Using task planner, a variety of calibrations on the flight controller must be performed in synchrony with other hardware components. The Raspberry-Pi is connected to a device in the base station through the open-source remote desktop (XRDP) protocol, which is operated by a buck converter.

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Detailed Description of Invention

The above prototype invention has two types. One is drone unit and other is remote unit. From the separate unit of drone and the remote unit we can clearly understand the functionality of this device. A battery is a device that stores chemical energy and converts it to electrical energy. The chemical reactions in a battery involve the flow of electrons from one material (electrode) to another, through an external circuit. The flow of electrons provides an electric current that can be used to do work.

A microcontroller is a compact integrated circuit designed to govern a specific operation in an embedded system. A typical microcontroller includes a processor, memory and input/output (I/O) peripherals on a single chip. A coreless DC motor does away with the iron core in the rotor. Instead, the rotor windings are wound in a skewed, or honeycomb fashion to form a self-supporting hollow cylinder. The stator magnet sits inside the coreless rotor. Other terms for coreless DC motors include "air core," "slotless," and "ironless." It rotates at a rate of 66000 RPM, which gradually makes the uplift moment in a drone.

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. Only using this module, we can interface the camera unit with the drone unit with ease. Just like a digital camera, it captures light through a small lens at the front using a tiny grid of microscopic light-detectors built into an image-sensing microchip (either a charge-coupled device (CCD) or, more likely these days, a CMOS image sensor). To capture the disaster occurred area lively and to know the intensity of destruction.

Generally, an RF module is a small size electronic device, that is used to transmit or receive radio signals between two devices. ... This communication may be accomplished through radio frequency communication. For various applications the medium of choice is radio frequency since it does not need line of sight. To establish a communication between the drone unit and the remote-control unit. And GPS unit is used to track the exact location of the disaster occurred.

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Detailed Description of Drawings

1) Figure (i) shows the Drone Unit
2) Figure (i) shows the Remote Unit
3) Figure (iii) shows the Battery Unit

A battery is a device that stores chemical energy and converts it to electrical energy. The chemical reactions in a battery involve the flow of electrons from one material (electrode) to another, through an external circuit. The flow of electrons provides an electric current that can be used to do work.

4) Figure (iv) shows the Micro Controller

A microcontroller is a compact integrated circuit designed to govern a specific operation in an embedded system. A typical microcontroller includes a processor, memory and input/output (I/O) peripherals on a single chip.

5) Figure (v) shows the Coreless Micro Motor

A coreless DC motor does away with the iron core in the rotor. Instead, the rotor windings are wound in a skewed, or honeycomb fashion to form a self-supporting hollow cylinder. The stator magnet sits inside the coreless rotor. Other terms for coreless DC motors include "air core," "slotless," and "ironless." It rotates at a rate of 66000 RPM, which gradually makes the uplift moment in a drone.

6) Figure (vi) shows the Raspberry PI Module

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. Only using this module, we can interface the camera unit with the drone unit with ease.

7) Figure (vii) shows the Camera Module

Just like a digital camera, it captures light through a small lens at the front using a tiny grid of microscopic light-detectors built into an image-sensing microchip (either a charge-coupled device (CCD) or, more likely these days, a CMOS image sensor). To capture the disaster occurred area lively and to know the intensity of destruction.

8) Figure (viii) shows the Transceiver Module

Generally, an RF module is a small size electronic device, that is used to transmit or receive radio signals between two devices. ... This communication may be accomplished through radio frequency communication. For various applications the medium of choice

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is radio frequency since it does not need line of sight. To establish a communication between the drone unit and the remote-control unit. And GPS unit is used to track the exact location of the disaster occurred.

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Different Embodiment of Invention

a) Initialize and import the OpenCV, SMTP library into the Python IDE platform, which is commonly used in image processing.

b) Capture the data frame, with the BGR colour space model (also known as the RGB model) as the default colour space model in OpenCV. The camera module continuously captures frames and converts them to a grayscale image, allowing for easier template matching in grayscale intensities than in RGB colour models, while also reducing processing time. Average pixel intensity value of 3x3 filter size neighbours. Meanwhile, for upper body, full body, and frontal face detection, fit the grayscaled data with a cascade classifier.

c) If the UAV is travelling at a higher altitude, it is more likely to use the stated colour. Next, we assign the lower and upper intensity ranges to determine the threshold value for tracking the acceptable colour.

d) Find the contour of the tracked colour (which is a mapping of similar intensity pixel values) and change the area if it goes outside the contour range. To locate in data frames, encircle the tracked colour.

e) If the data frame matches the cascade classifier or if the specified colour is found, return true.

f) If the condition is true, the UAV sends a mail warning message to the ground control station via the SMTP protocol.

g) To catch the next frame for further processing, clear and refresh the frame until it is terminated.

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Application of Invention

i. As opposed to manned aircraft, a UAV has a shorter launch time and more manoeuvrability than ground vehicles.

ii. This device will communicate with the base station via wireless network to receive control instructions and send images captured by the UAV to the base station.

iii. New methods for data collection and advanced image processing of remotely sensed data are being developed.

iv. A proportional integral derivative (PID) closed loop gain feedback controller can be used to deploy the UAV in building and ship surveillance.

v. It can also act as a medicine-carrying drone with first-aid care facilities, which can be used in the event of a medical emergency, using autonomous flight mission planning, i.e., by setting up waypoints with precise geographical co-ordinates.

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Drawings

BLOCK DIAGRAM:

DRONE UNIT:

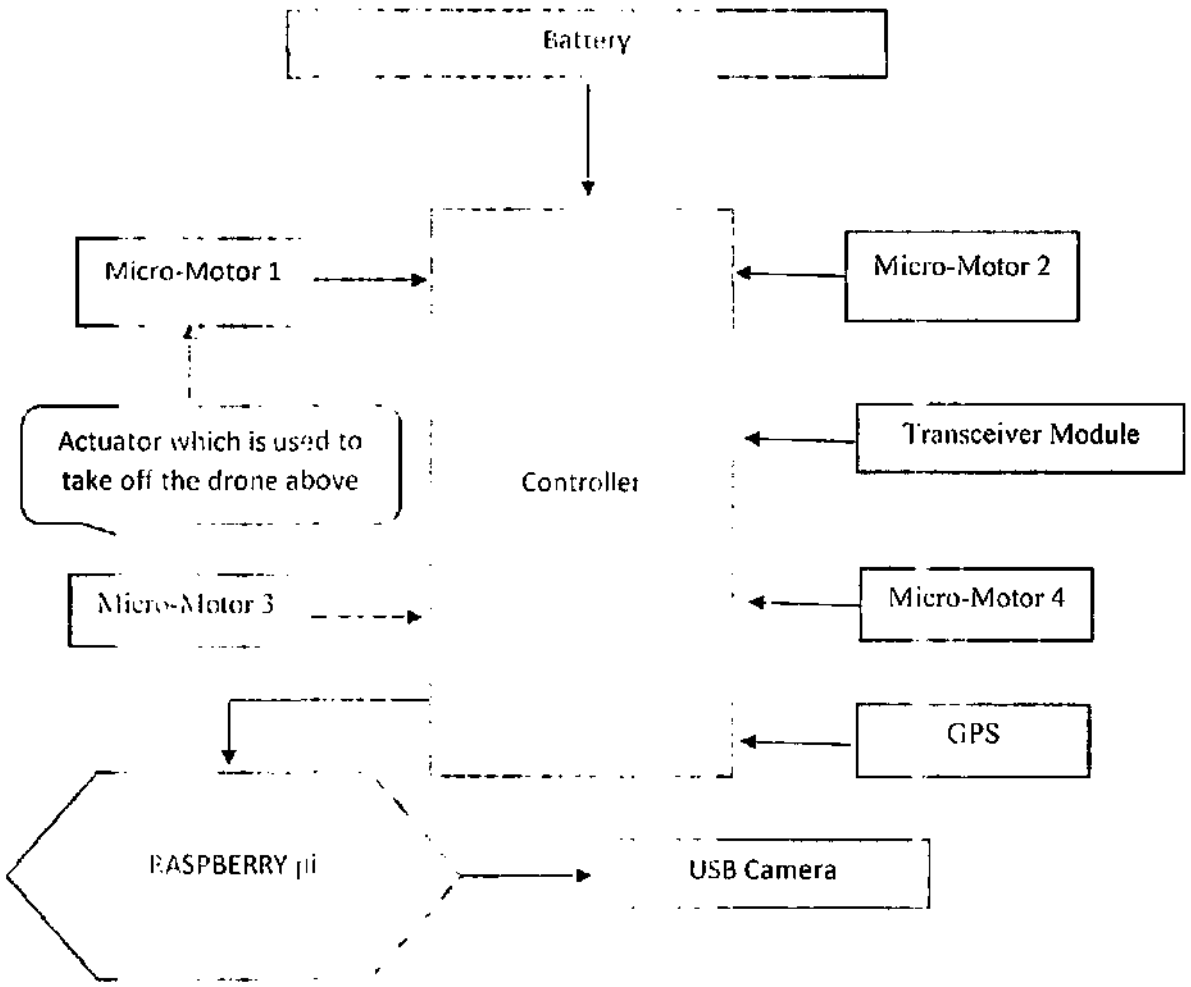


Figure (i) shows the Drone Unit

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REMOTE UNIT:

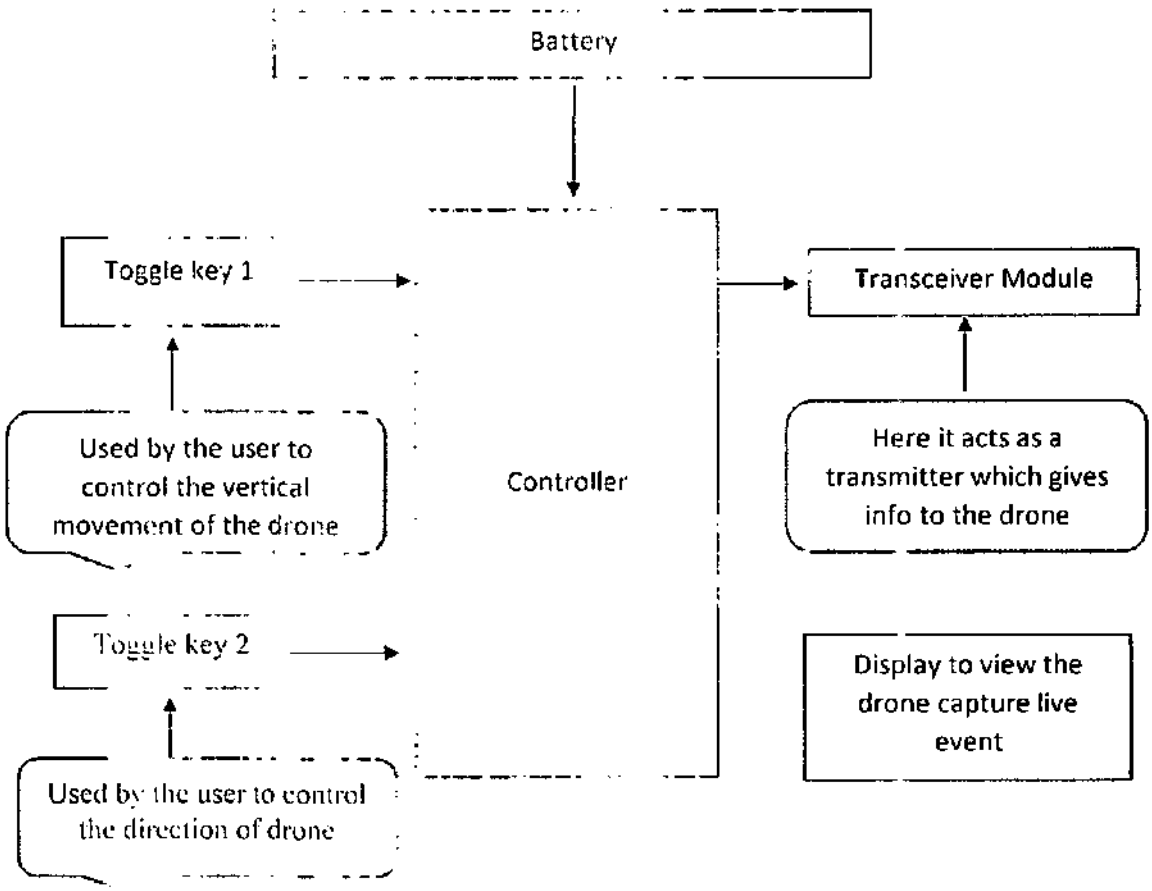
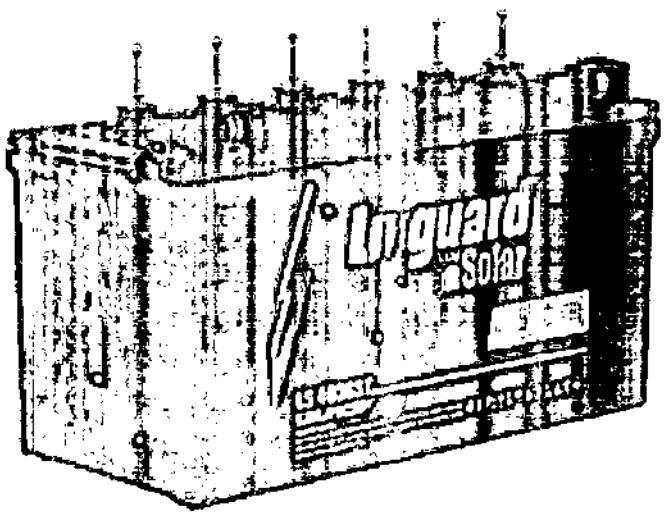


Figure (ii) shows the Remote Unit



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Figure (iii) shows the Battery Unit

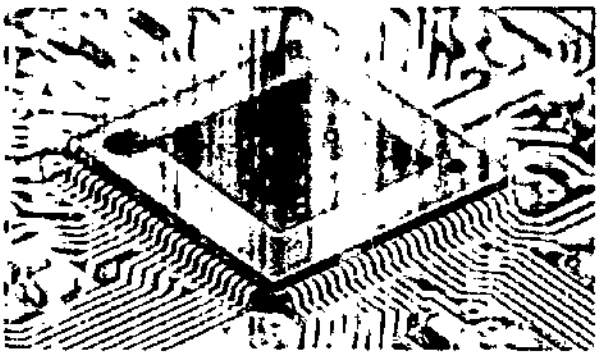


Figure (iv) shows the Micro Controller



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Figure (v) shows the Coreless Micro Motor

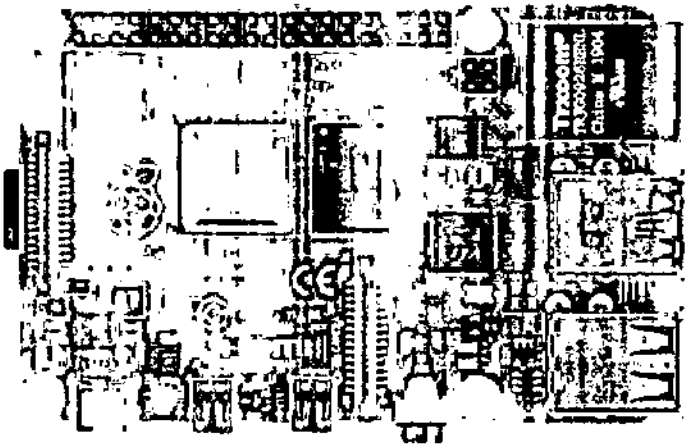


Figure (vi) shows the Raspberry PI Module

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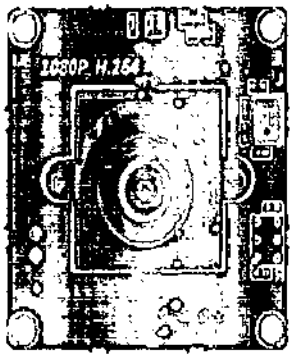


Figure (vii) shows the Camera Module

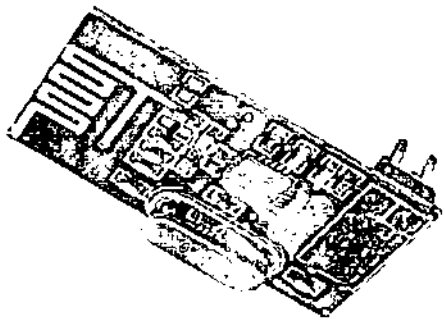


Figure (viii) shows the Transceiver Module

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"FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and sub-rule (1) of rule 20)	(FOR OFFICE USE ONLY) D|24715

	Application No.	202141012121
	Filing date:	22|03|2021
	Amount of Fee paid:	1750/-
	CBR No:	10323
	Signature:	

1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)

2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]

Ordinary (✓)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition (✓)	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

3A. APPLICANT(S)

Name in Full	Nationality	Country of Residence	Address of the Applicant	
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			Street	Kozhipara (PO),
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			Pin code	678 557

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			City	Akathethara

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			Pin code	678 008
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Name in Full	Nationality	Country of Residence	Address of the Applicant	
Dr. S. V. TRESA SANGEETHA	INDIAN	INDIA	House No.	University of Technology and Applied Sciences-AlMusannah
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			City	Al-Musannah
			State	Batinah
			Country	Sultanate of Oman
			Pin code	

3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]

Natural Person ( )	Other than Natural Person		
	Small Entity ( )	Startup ()	Others ( )

4. INVENTOR(S) [Please tick (✓) at the appropriate category]

Are all the inventor(s) same as the applicant(s) named above?	Yes (✓)	No ( )

If "No", furnish the details of the inventor(s)

Name in Full	Nationality	Country of Residence	Address of the Applicant	
			House No.	Ahalia School of Engineering &

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			Pin code	678 557
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			City	Akathethara
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			Country	India
			Pin code	678 008
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			Street	NSS College Road, NSS Nagar
			City	Akathethara
			State	Kerala
			Country	India
			Pin code	678 008
Name in Full	Nationality	Country of Residence	Address of the Applicant	
Dr. S. V. TRESA SANGEETHA	INDIAN	INDIA	House No.	University of Technology and Applied Sciences-AlMusannah
			Street	
			City	Al-Musannah
			State	Batinah
			Country	Sultanate of Oman
			Pin code	

5. TITLE OF THE INVENTION: UAV 'S FOR DISASTER IDENTIFICATION AND ALERT SYSTEM

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~~6. AUTHORISED REGISTERED PATENT AGENT(S)~~	~~IN/PA No.~~	
	~~Name~~	
	~~Mobile No.~~	
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	MURUGANANTH GOPAL RAJ, Professor, Department of Electrical and Electronics Engineering, Ahalia School of Engineering & Technology
	Postal Address	Kozhipara (PO), Palakkad – 678 557, Kerala.
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	Mobile No.	9447042400
	Fax No.	
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	Name	Dr. S. V. TRESA SANGEETHA, Lecturer, University of Technology and Applied Sciences-AlMusannah
	Postal Address	Al- Musannah, Batinah,

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		Sultanate of Oman
	Telephone No.	
	Mobile No.	00968 94239385
	Fax No.	
	E-mail ID	svsangeetha.gerard@rediffmail.com

~~8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION~~

~~Country~~	~~Application Number~~	~~Filing date~~	~~Name of the Applicant~~	~~Title of the invention~~	~~IPC (as classified in the convention country)~~

~~9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)~~

~~International application number~~	~~International filing date~~

~~10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION~~

~~Original (first) application No.~~	~~Date of filing of original (first) application~~

~~11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OFMAIN APPLICATION OR PATENT~~

~~Main application/patent No.~~	~~Date of filing of main application~~

12. DECLARATIONS

(a) Declaration by the inventors

(In case the applicant is an assignee: the inventors may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

We, the above-named inventors are the true & first inventors for this Invention and declare that the applicants herein are our assignee or legal.

(a) Date: 19.03.2021

(b) Signature:

(c) Name: MURUGANANTH GOPAL RAJ

22-Mar-2021/24715/202141012121/Form 1

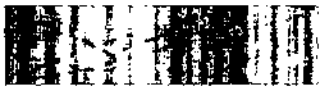
ATENT OFFICE CHENNAI 23/03/2021 11:58

(a) Date: 19.03.2021

(b) Signature:

(c) Name: PRADIP.C

(d) Date: 19.03.2021

(e) Signature: 

(f) Name: SAJU N

(g) Date: 19.03.2021

(h) Signature:

(i) Name: Dr. S. V. TRESA SANGEETHA

(ii) Declaration by the applicant(s) in the convention country

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date

(b) Signature(s)

(c) Name(s) of the signatory

22-Mar-2021/24715/2021410121121/Form 1

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(iii) Declaration by the applicants

We the applicants hereby declares that: -

We are in possession of the above-mentioned invention.

- ☐ The provisional/complete specification relating to the invention is filled with this application - NA
- ☐ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by us before the grant of patent to us.
- ☐ There is no lawful ground of objection(s) to the grant of the Patent to us - NA
- ☐ We are the true &first inventors.
- ☐ We are the assignee or legal representative of true & first inventors
- ☐ The application or each of the applications, particulars of which are given inParagraph-8, was the first application in convention country/countries in respect of our invention(s) - NA
- ☐ We claim the priority from the above-mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by us or by any person from which We derive the title.
- ☐ Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned inParagraph-9 - NA
- ☐ The application is divided out of Our application particulars of which is given in Paragraph-10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act.
- ☐ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11 – NA

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete/ provisional specification) #	No. of pages One		
No. of Claim(s)	No. of claims Six and No. of pages– One		
Abstract	No. of pages– One		
No. of Drawing(s)	No. of drawings and No. of pages – Eight and Six		

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In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification underrule13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

(b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable(2copies).

(c) Sequence listing in electronic form

(d) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2copies).

(e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service) if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.

(f) Translation of priority document/Specification/International Search Report/International Preliminary Report on Patentability.

(g) Statement and Undertaking on Form3

(h) Declaration of Inventorship on Form5

(i) Power of Authority

(j).....

Total fee ₹ 4,500.00 in Demand Draft No. 212249 Dt 16.03.2021 Drawn on Axis Bank, Nanganallur Branch.

We hereby declare that to the best of our knowledge, information and belief the fact and matters slated herein are correct and We request that a patent may be granted to us for the said invention.

Dated this Thursday of 19th March 2021

(a) Signature:

(b) Name: MURUGANANTH GOPAL RAJ

(a) Signature:

(b) Name: PRADIP.C

(a) Signature:

(b) Name: SAJU N

22-Mar-2021/24715/202141012121/Form 1

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(a) Signature:

Name: Dr. S. V. TRESA SANGEETHA

To,

The Controller of Patents

The Patent Office, at Guindy, Chennai – 600 032.

Note: -

* Repeat boxes in case of more than one entry.
* To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
* Tick (✓)/cross (x) whichever is applicable/not applicable in declaration inparagraph-12.
* Name of the inventor and applicant should be given in full, family name in the beginning.
* Strike out the portion which is/are not applicable.
* For fee: See First Schedule";

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FORM 2
THE PATENT ACT 1970
(39 of 1970)
&
The Patents Rules, 2003
PROVISIONAL/COMPLETE SPECIFICATION
(See Section 10 and Rule 13)

COMPLETE

UAV 'S FOR DISASTER IDENTIFICATION AND ALERT SYSTEM

1. APPLICANTS

(a) NAME: MURUGANANTH GOPAL RAJ
(b) NATIONALITY: INDIAN
(c) ADDRESS: Professor, Department of Electrical and Electronics Engineering, Ahalia School of Engineering & Technology, Kozhipara (PO), Palakkad – 678 557, Kerala.

(a) NAME: PRADIP. C
(b) NATIONALITY: INDIAN
(c) ADDRESS: Associate Professor, Department of EEE, NSS COLLEGE OF ENGINEERING, NSS College Road, NSS Nagar, Akathethara- 678 008, Kerala

(a) NAME: SAJU N
(b) NATIONALITY: INDIAN
(c) ADDRESS: Associate Professor, Department of EEE, NSS COLLEGE OF ENGINEERING, NSS College Road, NSS Nagar, Akathethara- 678 008, Kerala

(a) NAME: Dr. S. V. TRESA SANGEETHA
(b) NATIONALITY: INDIAN
(c) ADDRESS: Lecturer, University of Technology and Applied Sciences-AlMusannah, Al- Musannah, Batinah, Sultanate of Oman

The following specification particularly describes the invention and the manner in which it is to be performed

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CBR : 10323
DATE : 22/03/2021
Amt : 2750/-
22/3/21

FORM 9
THE PATENT ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
REQUEST FOR PUBLICATION
[See Section 11A [2]; rule 24A]

700289656

1. Name, Address and Nationality of the Applicants

1. APPLICANTS

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2. To be Signed by the Applicant Or his authorized registered Patent Agent	hereby request for early publication of our application for Patent No.....dated ..... under section 11A(2) of the Act. Dated this .....day of .....20.

2. Name of the Natural Persons Has signed

22-Mar-2021/24715/2021/IN/2021012121/Form 9

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(b) Name: MURUGANANTH GOPAL RAJ

(a) Signature:

(b) Name: PRADIP.C

(a) Signature: 

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(a) Signature:

(b) Name: Dr. S. V. TRESA SANGEETHA

To
The Controller of Patents,
The Patent Office,
At Guindy, Chennai 600 032.

Note:- For Fee: See First Schedule

22-Mar-2021/24715/202141012121/Form 9

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Abstract

Artificial intelligence (AI) is a set of hardware and software components capable of delivering computational units with abilities that appear to mimic human thought processes to a human observer. It employs a set of nature-inspired computational methods to simulate complex actual issues where mathematical or conventional modelling has been unsuccessful or unreliable. Artificial Intelligence is based on a model of the human brain that uses inexact and imperfect information to generate behavioural responses based on experience gained over time. In cricket matches, a referee will continuously monitor the no ball line, which is a foul part. The proposed work implemented a laser distant sensor, which can monitor in line of crease and signal can be transmitted to the umpire wirelessly using Bluetooth 5.0.

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We Claim

The invention of AI Based No Ball Detection System in Cricket Field comprises of:

1. In order to identify foot, overstep without a ball in a cricket match, we employed an image subtraction method that does not need sensors on the cricket field.
2. As a result, there will be no distractions for the athletes. This concept may be used to various types of no ball detection, such as foot and crease detection and wide ball detection.
3. Our specific goal is to create an automated cricket umpiring system based on computer vision.
4. The suggested approach has aided in making precise judgments at vital points in the game.
5. It raises the spirit of the game by introducing new tools that, with advancements in technology, may be used to address future issues such as monitoring the ball in real-time, recognising the absence of a ball, and so on.
6. It is possible to address the accuracy and in-time identification of faults in outdoor sports, which is also a major challenge for researchers.

(PRADIP C) (Dr. SARFRAZ FAYAZ KHAN

(Dr. S. MUTHUKRISHNAN) (Dr. S. GEEITHA) (MURUGANANTH GOPAL RAJ)

(Mr. A. MANICKAVASAGAM) (Dr. P. SANTHOSH) (Dr. V. SURESH BABU)

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Field of Invention

Cricket is a globally famous sport in which various technologies are employed to assist match umpires in making judgments. The decision of whether a bowled delivery is a no-ball or a legal ball is frequently disputed owing to human perception. Because a single ball may decide the game's outcome, it's clear to make the best option possible while there's no ball. To identify the change in pixel values, we separated the bowling crease into two sections and used the image subtraction approach on both regions in this work. After that, we tested our approach on real-world video frames. Because our approach for detecting the overstep no ball is based on pixel-by-pixel picture subtraction. Cricket is a bat-and-ball sport in which a single delivery may change a predicted winner into a loss. As a result, each delivery is seen as a critical time for both sides. Umpires are in charge of judging whether a ball bowled by a bowler is approved in every cricket match. When umpires rule against a delivery, it can happen in a variety of ways. Some instances have been designated as No Ball. For unlawful conduct by bowlers or fielders, a No Ball might be declared. The opposing side receives an additional run and delivery as a result of a No Ball. Furthermore, batsmen will not get dismissed unless they are run out.

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Background of Invention

One of the most prevalent causes is the front foot overstepping the popping crease when throwing the ball. However, in certain circumstances, utilising television replay, examining this type of No Ball takes a few minutes. As a result, umpires make decisions based on their perceptions. However, human perception is not always correct. Furthermore, due to the limits of current technology, it is not always feasible to get an accurate conclusion. In that instance, the batting side gets the benefit of the doubt. As a result, spectators and cricket fans are left in a state of uncertainty and dispute. To boost the acceptance of the judgments, it is vital to eliminate dispute. If this can be accomplished by technological means, the game will be more fair and pleasant. However, developing technologies that can determine the overstepping No Ball in real time and with more precision is difficult. Previously suggested investigations in this subject have attempted to answer the problem, however due to the use of sensors on the field and bowlers, they are infeasible, pricey, and prone to mistake.

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Object of Invention

1. AI Processor
2. Power Supply
3. Laser Distant Sensor
4. Bluetooth 5.0

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Summary of Invention

On the other hand, in this study invention, we present a computer vision-based technique that does delicate pixel-based distance analysis between the feet and the popping crease, resulting in a high degree of choice accuracy. Because it would get video feed from broadcasting cameras, the suggested solution does not require any additional infrastructure. Due to the lack of an infield sensor and other devices, our suggested technique is projected to perform better and be less expensive to operate. Cricket is one of the most widely played sports in the world. Different technologies are utilised in cricket matches to assist match umpires in making judgments. Disputes arise frequently because of human perceptions of whether a bowled delivery is a no-ball or a legal ball. Because a single ball may decide the outcome of the match, it's apparent to make the best option possible when it comes to no ball. We employed image subtraction method in existing approach to identify foot overstep no ball in cricket match, which does not contain sensors in cricket field. As a result, players will not be distracted.

We employ Metal in the Bowler's shoe (customised in the heal portion) to detect the Front Foot No-Ball when the Bowler bowls the Overstepped Delivery in the proposed task. It indicates that the front foot has crossed the Popping crease. The proximity sensor in this system detects overstepping deliveries and sends an alarm message to the umpire, who then signals it as a No-Ball. The goal of the game is for one team to score more runs than the other. There are two innings in a cricket match. Before the competition begins, both captains are requested to toss the ball. Following the toss, the batting team has two batsmen and the bowling team has eleven players on the field. In cricket, certain techniques are utilised to determine run outs and edge detections, but one of the major issues has been detecting the front foot 'No-ball,' which has gone unreported in recent matches. On-field umpires have a lot on their plates, including something as complicated as field location. Various technologies are being employed to assist match umpires in making decisions. Determining whether a bowled delivery is a no-ball or legal ball is frequently disputed owing to human perception.

Anyone who follows sports like cricket understands the importance of the umpire's judgement. A bad judgement in a game's vital moments causes an injustice to a team; it has the same impact of winning or losing the game; the game is spoilt, which is a huge disappointment to the supporters. The primary aspects of the game are turned into activities by sports science, such as practise before, during, and after competition.

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Detailed Description of Invention

In this invention of prototype device, when the power supply is given through the battery the device starts functioning. The battery is connected to the Jetson Nano AI Processor. The power of modern AI is now available for makers, learners, and embedded developers everywhere.

NVIDIA® Jetson Nano™ Developer Kit is a small, powerful computer that lets you run multiple neural networks in parallel for applications like image classification, object detection, segmentation, and speech processing. All in an easy-to-use platform that runs in as little as 5 watts.

It's simpler than ever to get started! Just insert a microSD card with the system image, boot the developer kit, and begin using the same NVIDIA Jet Pack SDK used across the entire NVIDIA Jetson™ family of products. Jet Pack is compatible with NVIDIA's world-leading AI platform for training and deploying AI software, reducing complexity and effort for developers.

Jetson Nano is supported by NVIDIA Jet Pack™ with the same CUDA-X™ software stack used for breakthrough AI-based products across all industries. Jet Pack includes the latest NVIDIA tools for application development and optimization and supports cloud-native technologies like containerization and orchestration for simplified development and updates.

Proven frameworks built on top of Jet Pack give Jetson developers greater performance and scalability as they create industry-specific end products. These include NVIDIA Deep Stream and Transfer Learning Toolkit for intelligent video analytics, NVIDIA Clara™ for healthcare imaging, genomics, and patient monitoring, and NVIDIA Isaac™ for robotics. Opto NCDT sensors have set milestones for industrial laser displacement measurement. Whether for displacement, distance or thickness measurement, Micro-Epsilon laser sensors are considered one of the best in their class. These laser sensors are used e.g. in measurement and monitoring tasks in factory automation, electronics production, robotics and vehicle construction. Due to high measuring rate, laser sensors from Micro-Epsilon offer high measurement accuracy and provide reliable results even in continuous industrial operation.

Most of the opto NCDT sensors can be set up using a web interface. Therefore, set up and configuration of the sensors is convenient and can be stored and transferred to other

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sensors via a standard web browser. The opto NCDT BL models are equipped with a blue laser diode and are used when standard sensors with a red laser diode are operating at their performance limits. Due to its shorter wavelength, the blue laser does not penetrate the target surface, projecting a small light spot on the surface and therefore providing stable and precise results. This technology is preferably used with organic and (semi-)transparent objects, as well as for red-hot glowing metals.

Measurement tasks involving blue laser sensors on red-hot glowing objects exceeding 700 °C and transparent objects such as glass and plastics, are protected by patent law. The opto batt NCDT Blue Laser models achieve excellent signal stability and thus precise measurement results on these surfaces.

Bluetooth 5 is the most significant advancement in the Bluetooth standard since the introduction of Bluetooth Low Energy in Bluetooth 4.0. It is taking Bluetooth LE to the next level and is making brand new use cases possible and improving existing ones.

There are four significant new features of Bluetooth 5:

- A higher bit rate of 2 Mbps.
- A long-range mode with better sensitivity at two new lower bit rates of 500 kbps and 125 kbps.
- An 8-x improvement in broadcast capability with advertising extensions.
- An improved channel selection algorithm (CSA #2) which enables improved channel coordination and coexistence efficiency with other Bluetooth and non-Bluetooth traffic.
-

The nRF52 Series multiprotocol SoCs are high performance that support Bluetooth 5. The nRF52840 supports all new features of Bluetooth 5, whilst the other members support all Bluetooth 5 features with the exception of the long-range modes. The nRF52 Series family of devices cover baseline through general purpose up to highly sophisticated Bluetooth 5 devices. All devices in the family are supported by qualified, high performance, production-grade software stacks. Together they offer an unparalleled development option for creating products with Bluetooth 5.

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Detailed Description of Drawings

(1) Figure (i) shows the Block Diagram

(2) Figure (ii) shows the Laser Distant Sensor

Op to NCDT sensors has set milestones for industrial laser displacement measurement. Whether for displacement, distance or thickness measurement, Micro-Epsilon laser sensors are considered one of the best in their class. These laser sensors are used e.g. in measurement and monitoring tasks in factory automation, electronics production, robotics and vehicle construction. Due to high measuring rate, laser sensors from Micro-Epsilon offer high measurement accuracy and provide reliable results even in continuous industrial operation. Most of the op to NCDT sensors can be set up using a web interface. Therefore, set up and configuration of the sensors is convenient and can be stored and transferred to other sensors via a standard web browser.

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(3) Figure (iii) shows the JETSON Nano AI Processor

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(4) Figure (iv) shows the Bluetooth 5.0

Bluetooth 5 is the most significant advancement in the Bluetooth standard since the introduction of Bluetooth Low Energy in Bluetooth 4.0. It is taking Bluetooth LE to the next level and is making brand new use cases possible and improving existing ones. There are four significant new features of Bluetooth 5:

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- A long range mode with better sensitivity at two new lower bit rates of 500 kbps and 125 kbps.
- An 8 x improvement in broadcast capability with advertising extensions.
- An improved channel selection algorithm (CSA #2) which enables improved channel coordination and coexistence efficiency with other Bluetooth and non-Bluetooth traffic.

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high performance, production-grade software stacks. Together they offer an unparalleled development option for creating products with Bluetooth 5.

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Different Embodiment of Invention

i. This system explains how sensors may play an important part in sports as well. Here, we employ sensors in the ground to identify the front foot no ball, which lowers the labour and controversy for umpires.

ii. The sensors on the popping crease instantly identify the No Ball. This eliminates the involvement of the On-Field Umpire and the Third Umpire in the No Ball judgement.

iii. By resolving this issue, cricket will be able to achieve 100% accuracy in no-ball situations without the need for human intervention.

iv. The above-mentioned performance is also visible on the mobile app.

v. Coaches can have a detailed understanding of a batsman's strengths and flaws.

vi. It therefore allows coaches to effectively communicate their opinions to the batter in order to enhance the area of weakness.

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Application of Invention

a. To begin, we created a template frame for each of the cameras, where the marker of popping crease is recognised using the Hough transformation method.

b. Then, using image subtraction analogies, we applied it to the video frames and template frame from the umpire's chosen camera.

c. Our suggested solution has eliminated the inability of human vision to determine whether or not a ball was overstepped on a wiped-out popping crease.

d. Our technique, to the best of our knowledge and based on multiple no ball detection approaches and their application, can be successful and efficient.

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Drawings

BLOCK DIAGRAM:

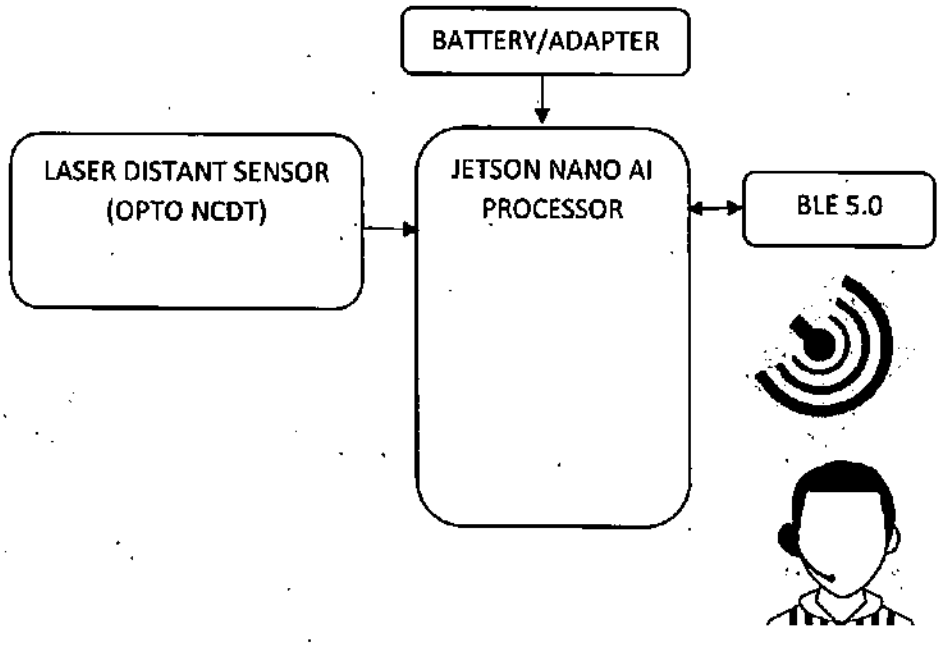


Figure (i) shows the Block Diagram

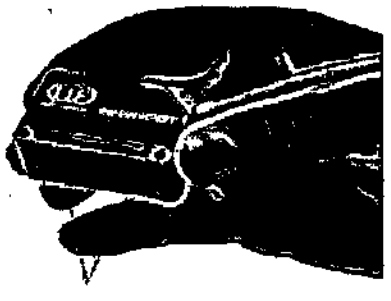


Figure (ii) shows the Laser Distant Sensor

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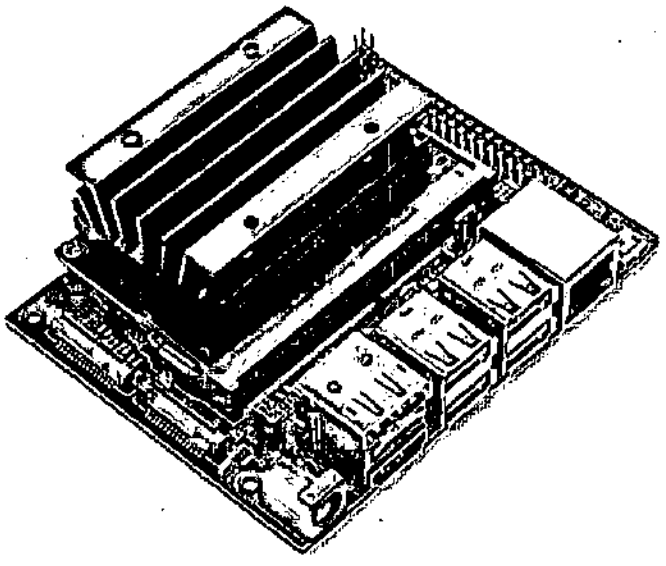


Figure (iii) shows the Jet son Nano AI Processor

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"FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and sub-rule (1) of rule 20)	(FOR OFFICE USE ONLY) D | 106918

	Application No.	202141053537
	Filing date:	22/11/2021
	Amount of Fee paid:	1750/-
	CBR No:	43377
	Signature:	

1. APPLICANT'S REFERENCE /IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)	

2. TYPE OF APPLICATION [Please tick (☐) at the appropriate category]

Ordinary (☐)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition (☐)	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

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Are all the inventor(s) same as the applicant(s) named above?	Yes (☐)	No ( )

If "No", furnish the details of the inventor(s)

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5. TITLE OF THE INVENTION: ARTIFICIAL INTELLIGENCE BASED NO-BALL DETECTION IN THE CRICKET FIELD.

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	E-mail ID	geethas.it@mkce.ac.in
	Name	MURUGANANTH GOPAL

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	Telephone No.	
	Mobile No.	+(91)-9824324269
	Fax No.	
	E-mail ID	manick1.a@gail.com
	Name	SANTHOSH P
	Postal Address	51, Prakasam Nagar, Premier Nagar, Othakkalamandapam, Coimbatore, Tamil Nadu
	Telephone No.	
	Mobile No.	9360697172
	Fax No.	
	E-mail ID	santhosivam@gmail.com
	Name	SURESH BABU V
	Postal Address	1/102, Kandankala Vila, Marthandam, Kanyakumari District, Tamil Nadu 629 151
	Telephone No.	
	Mobile No.	+(91) - 94422 54734
	Fax No.	
	E-mail ID	sureshbabu.v@hit.edu.in

22-Nov-2021/106918/202141053537/Form 1

PATENT OFFICE CHENNAI 29/11/2021 12:34

~~8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION~~

Country	Application Number	Filing date	~~Name of the applicant~~	~~Title of the invention~~	~~IPC (as classified in the convention country)~~

~~9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)~~

~~International application number~~	~~International filing date~~

~~10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION~~

~~Original (first) application No.~~	~~Date of filing of original (first) application~~

~~11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT~~

~~Main application/patent No.~~	~~Date of filing of main application~~

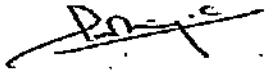
12. DECLARATIONS

(i) Declaration by the inventor

(In case the applicant is an assignee: the inventor may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

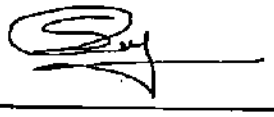
I, the above-named inventor is the true & first inventor for this Invention and declare that the applicant herein is my assignee or legal representative.

(a) Date: 22.11.2021

(b) Signature: 

(c) Name: PRADIP C

(a) Date: 22.11.2021

(b) Signature: 

22-Nov-2021/106918/202141053537/Form 1

PATENT OFFICE CHENNAI 29/11/2021 12:34

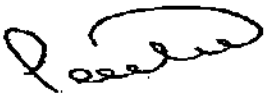
(c) Name: Dr. SARFRAZ FAYAZ KHAN

(a) Date: 22.11.2021

(b) Signature: 

(c) Name: Dr. S. MUTHUKRISHNAN

(a) Date: 22.11.2021

(b) Signature: 

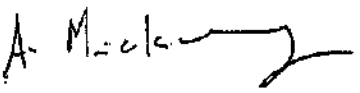
(c) Name: Dr. S. GEEITHA

(a) Date: 22.11.2021

(b) Signature: 

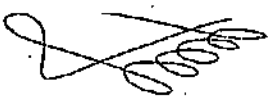
(c) Name: MURUGANANTH GOPAL RAJ

(a) Date: 22.11.2021

(b) Signature: 

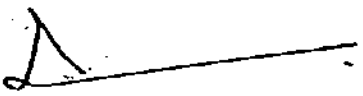
(c) Name: Mr. A. MANICKAVASAGAM

(a) Date: 22.11.2021

(b) Signature: 

(c) Name: Dr. P. SANTHOSH

(a) Date: 16.11.2021

(b) Signature: 

(c) Name: Dr. V. SURESH BABU

22-Nov-2021/106918/202141053537/Form 1

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~~(ii) Declaration by the applicant(s) in the convention country~~

~~(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)~~

~~I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.~~

~~(a) Date~~

~~(b) Signature(s)~~

(c) ~~Name(s) of the signatory~~

22-Nov-2021/106918/202141053537/Form 1

PATENT OFFICE CHENNAI 29/11/2021 12:34

(iii) Declaration by the applicant(s)

We the applicant(s) hereby declare(s) that: -

We are in possession of the above-mentioned invention.

The provisional/complete specification relating to the invention is filled with this Application.

- ☐ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us-NA
- ☐ There is no lawful ground of objection(s) to the grant of the Patent to me/us. - NA
  We are the true & first inventor(s).
  We are the assignee or legal representative of true & first inventor(s).
- ☐ The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my/our invention(s)-NA
  We claim the priority from the above-mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which We derive the title.
- ☐ My/our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9- NA
  The application is divided out of my /our application particulars of which is given in Paragraph-10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act
- ☐ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11 – NA

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete/ provisional specification) #	No. of pages - One		
No. of Claim(s)	No. of claims Six and No. of pages – One		
Abstract	No. of pages - One		
No. of Drawing(s)	No. of drawings and No. of pages – Four and Five		

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In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

(b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(c) Sequence listing in electronic form

(d) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service) if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.

(f) Translation of priority document/Specification/International Search Report/International Preliminary Report on Patentability.

(g) Statement and Undertaking on Form 3

(h) Declaration of Inventorship on Form 5

(i) Power of Authority

(j).....

.....

Total fee Rs. 4,500.00 in bearing Demand Draft No. 212842 Dated 19.11.2021 drawn on Axis Bank, Nanganallur Branch.

I hereby declare that to the best of my knowledge, information and belief the fact and matters stated herein are correct and I request that a patent may be granted to me for the said invention.
Dated this Wednesday of 22nd of November 2021

(a) Signature:
(b) Name: PRADIP C

(a) Signature:
(b) Name: Dr. SARFRAZ FAYAZ KHAN

(a) Signature:
(b) Name: Dr. S. MUTHUKRISHNAN

22-Nov-2021/106918/202141053537/Form 1

PATENT OFFICE CHENNAI 29/11/2021 12:34

(a) Signature:
(b) Name: Dr. S. GEEITHA

(a) Signature:
(b) Name: MURUGANANTH GOPAL RAJ

(a) Signature:
(b) Name: Mr. A. MANICKAVASAGAM

(a) Signature:
(b) Name: Dr. P. SANTHOSH

(a) Signature:
(b) Name: Dr. V. SURESH BABU

To,
The Controller of Patents
The Patent Office, at Guindy, Chennai – 600 032.

Note: -

* Repeat boxes in case of more than one entry.
* To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
* Tick (☐)/cross (x) whichever is applicable/not applicable in declaration in paragraph-12.
* Name of the inventor and applicant should be given in full, family name in the beginning.
* Strike out the portion which is/are not applicable.
* For fee: See First Schedule";

22-Nov-2021/106918/202141053537/Form 1

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700274180

FORM 2
THE PATENT ACT 1970
(39 of 1970)
&
The Patents Rules, 2003
PROVISIONAL/COMPLETE SPECIFICATION
(See Section 10 and Rule 13)

COMPLETE

ARTIFICIAL INTELLIGENCE BASED NO BALL DETECTION SYSTEM IN CRICKET FIELD.

1. APPLICANT

(a) NAME: PRADIP C
(b) NATIONALITY: INDIAN
(c) ADDRESS: 38/807, Sreenivasa Gardens, Palakkad – 678 006, Kerala.

(a) NAME: SARFRAZ FAYAZ KHAN
(b) NATIONALITY: INDIAN
(c) ADDRESS:105, Motiwala Nagar, Aurangabad – 431 001, Maharashtra.

(a) NAME: Dr. S. MUTHUKRISHNAN
(b) NATIONALITY: INDIAN
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(a) NAME: MURUGANANTH GOPAL RAJ
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(c) ADDRESS: Ahalia School of Engineering & Technology, Kozhipara (PO), Palakkad – 678 557, Kerala.

(a) NAME: MANICKAVASAGAM A
(b) NATIONALITY: INDIAN
(c) ADDRESS: Assistant Professor, EEE Department, Ahalia School of Engineering and

22-Nov-2021/106918/202141053537/Form 2(Title Page)

PATENT OFFICE CHENNAI 29/11/2021 12:34

Technology, Kozhipara (PO), Palakkad – 678 557, Kerala

(a) NAME: SANTHOSH P
(b) NATIONALITY: INDIAN
(c) ADDRESS: 51, Prakasam Nagar, Premier Nagar, Othakkalmandapam, Coimbatore – 641 032, Tamil Nadu

(a) NAME: SURESH BABU V
(b) NATIONALITY: INDIAN
(c) ADDRESS: 1/102, Kandankala Vila, Marthandam – 629 151, Tamil Nadu.

The following specification particularly describes the invention and the manner in which it is to be performed

22-Nov-2021/106918/202141053537/Form 2(Title Page)

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700274181

CBR: 43377
DATE: 22/11/2021
Amt: 2750/-

22/11/21

FORM 9
THE PATENT ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
REQUEST FOR PUBLICATION
[See Section 11[2]; rule 24A]

1. Name, Address and Nationality of the Applicant

(a) NAME: PRADIP C
(b) NATIONALITY: INDIAN
(c) ADDRESS: 38/807, Sreenivasa Gardens, Palakkad – 678 006, Kerala.

(a) NAME: SARFRAZ FAYAZ KHAN
(b) NATIONALITY: INDIAN
(c) ADDRESS:105, Motiwala Nagar, Aurangabad – 431 001, Maharashtra.

(a) NAME: Dr. S. MUTHUKRISHNAN
(b) NATIONALITY: INDIAN
(c) ADDRESS: 23. Annamalai Nagar, VadakipalayamPirivu, Coimbatore Road, Pollachi – 642 001, Tamil Nadu

(a) NAME: Dr. S. GEEITHA
(b) NATIONALITY: INDIAN
(c) ADDRESS: 60/1-A-1, Kannanur Mariamman Koil Street, R.S. Road, Namakkal – 638 006, Tamil Nadu

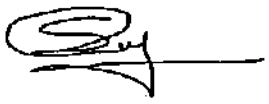
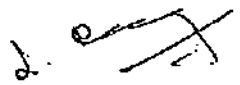
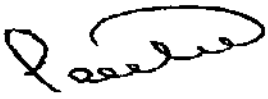
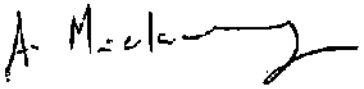
(a) NAME: MURUGANANTH GOPAL RAJ
(b) NATIONALITY: INDIAN
(c) ADDRESS: Ahalia School of Engineering & Technology, Kozhipara (PO), Palakkad – 678 557, Kerala.

(a) NAME: MANICKAVASAGAM A
(b) NATIONALITY: INDIAN
(c) ADDRESS: Assistant Professor, EEE Department, Ahalia School of Engineering and Technology, Kozhipara (PO), Palakkad – 678 557, Kerala

(a) NAME: SANTHOSH P
(b) NATIONALITY: INDIAN
(c) ADDRESS: 51, Prakasam Nagar, Premier Nagar, Othakkalmandapam, Coimbatore – 641 032, Tamil Nadu

22-Nov-2021/106918/202141053537/Form 9

PATENT OFFICE CHENNAI 29/11/2021 12:36

(a) NAME: SURESH BABU V **(b) NATIONALITY:** INDIAN **(c) ADDRESS: 1/102, Kandankala Vila, Marthandam – 629 151, Tamil Nadu.**
2. To be Signed by the Applicant Or his authorized registered Patent Agent — hereby request for early publication of our application for Patent No.....dated ..... under section 11A(2) of the Act. Dated this .....day of .....20.
3. Name of the Natural Person Has signed (a) Signature:  (b) Name: PRADIP C (a) Signature:  (b) Name: Dr. SARFRAZ FAYAZ KHAN (a) Signature:  (b) Name: Dr. S. MUTHUKRISHNAN (a) Signature:  (b) Name: Dr. S. GEEITHA (a) Signature:  (b) Name: MURUGANANTH GOPAL RAJ (a) Signature:  (b) Name: Mr. A. MANICKAVASAGAM

22-Nov-2021/106918/2021410535537/Form 9

PATENT OFFICE CHENNAI 29/11/2021 12:36

(a) Signature:
(b) Name: Dr. P. SANTHOSH

(a) Signature:
(b) Name: Dr. V. SURESH BABU

To

The Controller of Patents,
The Patent Office,
At Guindy, Chennai 600 032.

Note:- For Fee: See First Schedule

22-Nov-2021/106918/202141053537/Form 9

PATENT OFFICE CHENNAI 29/11/2021 12:36

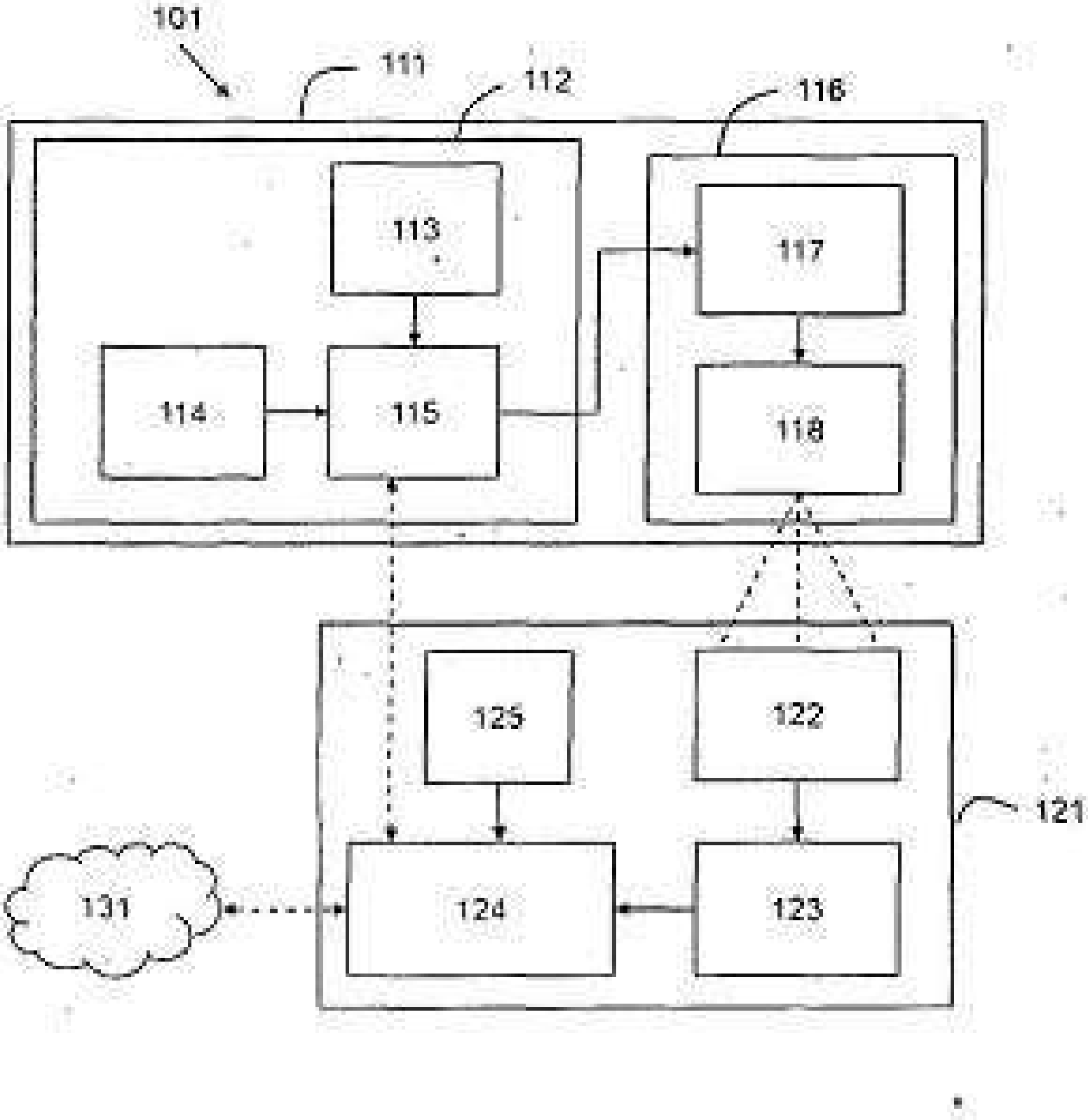


FIG 2

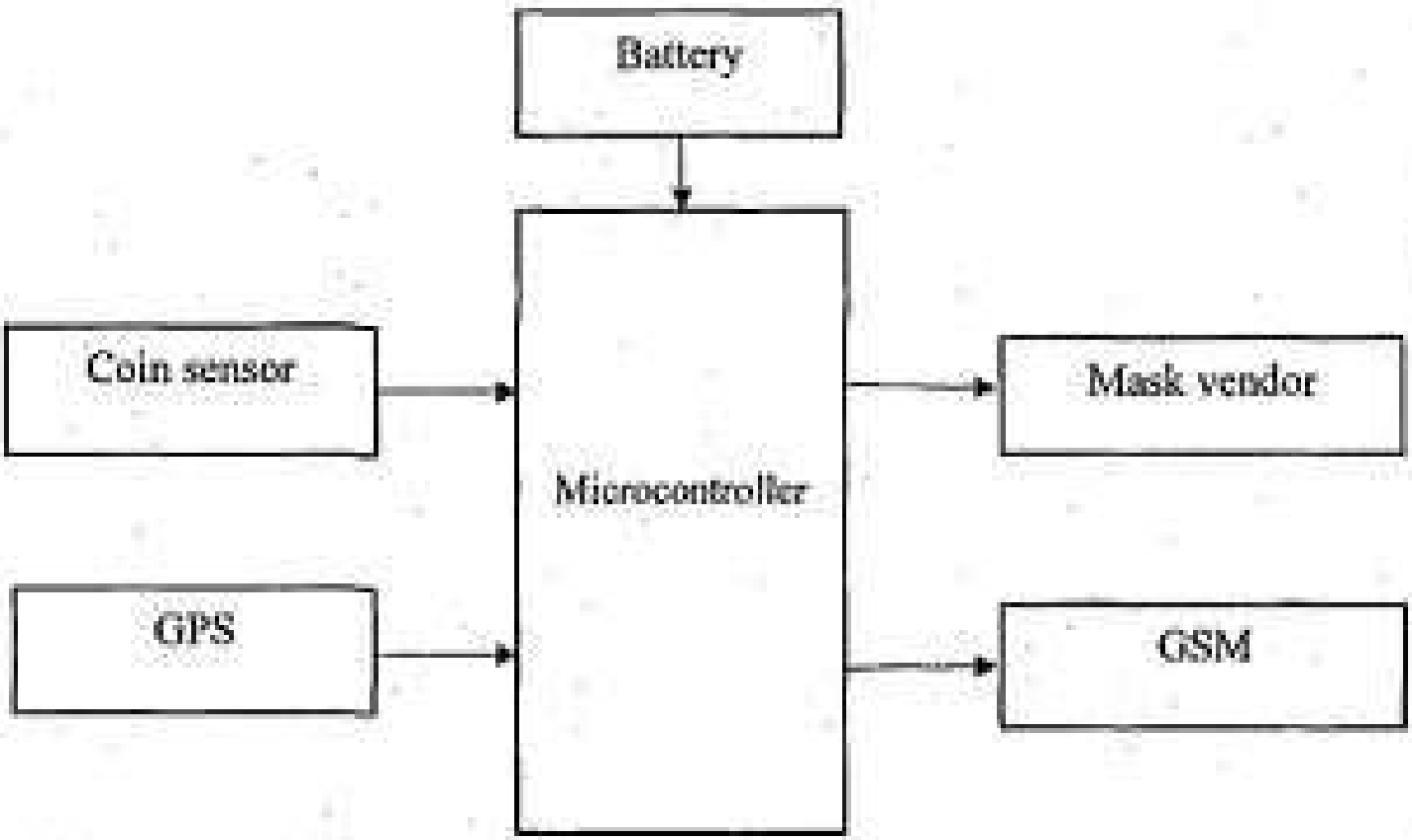


Figure (i) shows the Block Diagram

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :30/07/2022
(21) Application No.202241043758 A
(43) Publication Date : 05/08/2022

(54) Title of the invention : IMAGE REGISTRATION AND RECOGNITION OF BRAIN IMAGES CAPTURED USING MULTIPLE MODALITIES FOR EARLY DETECTION

(51) International classification :A61B0006030000, A61B0006000000, A61B0005055000, G01R0033480000, A6,1B0090000000
(86) International Application No :PCT//
Filing Date :01/01/1900
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

(71)**Name of Applicant :**
1)Saritha. B
Address of Applicant :Assistant Professor, Jai Shriram Engineering College, AvinashiPalayam, Tamilnadu, India - 638660 ---------- ----------
2)Thotakura Balaji
3)Dr. S. Radha Mahendran
4)J. Chanemougavally
5)Dr. Shruthy K M
6)Dr. N Ramkumar
7)Chetana Ganapati Magadum
8)Dr. Sivakumar. R
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Saritha. B
Address of Applicant :Assistant Professor, Jai Shriram Engineering College, AvinashiPalayam, Tamilnadu, India - 638660 ---------- ----------
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4)J. Chanemougavally
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5)Dr. Shruthy K M
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6)Dr. N Ramkumar
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Address of Applicant :Assistant Professor, Smt. Kasturbai Walchand College, Sangli, Maharashtra, India - 416416 ---------- ----------
8)Dr. Sivakumar. R
Address of Applicant :Professor, Department of Computer Science and Engineering, Ahalia School of Engineering & Technology, Palakkad, Kerala, India - 678557 ---------- ----------

(57) Abstract :
Brain Image Registration and Recognition technologies, the invention that is being suggested is titledCaptured Using Multiple Modalities for Early Detection." The pictures of the brain are obtained by the use of a variety of medical imaging modalities, such as magnetic resonance imaging (MRI), computed tomography (CT), positron emission tomography (PET), and others. Image registration methods allow for the detection of the precise state and location of a brain tumour. This recognition is made possible.

No. of Pages : 10 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :17/08/2020

(21) Application No.202041035424 A

(43) Publication Date : 04/09/2020

(54) Title of the invention : EMBEDDED REAL-TIME FINGER-VEIN DETECTION BASED ADVANCED SECURITY SYSTEM

(51) International classification	:G08B13/00
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No	:NA
Filing Date	:NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number	:NA
Filing Date	:NA
(62) Divisional to Application Number	:NA
Filing Date	:NA

(71)**Name of Applicant :**

1)Dr. MURUGANANTH GOPAL RAJ

Address of Applicant :S/O, P. Gopal Raj, 23, Annamalai Nagar, Vadakipalayam Pirivu, Coimbatore Road, Pollachi 642 002, Tamil Nadu, India Tamil Nadu India

2)Dr. P. BALAJI SRIKAANTH

3)Dr. VEERAMANI MARIMUTHU

4)Dr. G. RAMKUMAR

5)M. TAMILSELVI

6)Dr. GURPREET SINGH

7)K. AJITA LAKSHMI

8)BALAMURUGAN S. M.

9)Dr. SURESH BABU V

10)Dr. SURAYA MUBEEN

(72)**Name of Inventor :**

1)Dr. MURUGANANTH GOPAL RAJ

2)Dr. P. BALAJI SRIKAANTH

3)Dr. VEERAMANI MARIMUTHU

4)Dr. G. RAMKUMAR

5)M. TAMILSELVI

6)Dr. GURPREET SINGH

7)K. AJITA LAKSHMI

8)BALAMURUGAN S. M.

9)Dr. SURESH BABU V

10)Dr. SURAYA MUBEEN

(57) Abstract :

ABSTRACT EMBEDDED REAL-TIME FINGER-VEIN DETECTION BASED ADVANCED SECURITY SYSTEM A finger-vein recognition (FVR) system is disclosed. It consists of three hardware modules. The image acquisition module is used to collect finger-vein images. The DSP main board including the DSP chip, memory (flash), and communication port is used to execute the finger-vein recognition algorithm and communicate with the peripheral device. A human- machine communication module (LED or keyboard) is used to display recognition results and receive inputs from users. The finger-vein recognition algorithm contains two stages: the enrollment stage and the verification stage.

No. of Pages : 17 No. of Claims : 2

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :28/12/2020

(21) Application No.202041056676 A
(43) Publication Date : 26/02/2021

(54) Title of the invention : IoT based Smart Device for Pollution Control and Traffic Management System

(51) International classification	:G08G0001040000, G08G0001056000, G08G0001082000, G08G0001087000, G08G0001017000
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	:PCT// :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

(71)**Name of Applicant :**
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2)Dr. D. KARUNKUZHALI
3)Dr. T. PONNARASI
4)Dr. R. JAICHANDRAN
5)D. ROOPA
6)D. NIVEA
7)R. OHMSAKTHI VEL
8)M. KRISHNA KUMAR
9)Dr.B. UMA MAHESWARI
10)Dr.P. SRIDEVI PONMALAR
(72)**Name of Inventor :**
1)Dr. MURUGANANTH GOPAL RAJ
2)Dr. D. KARUNKUZHALI
3)Dr. T. PONNARASI
4)Dr. R. JAICHANDRAN
5)D. ROOPA
6)D. NIVEA
7)R. OHMSAKTHI VEL
8)M. KRISHNA KUMAR
9)Dr.B. UMA MAHESWARI
10)Dr.P. SRIDEVI PONMALAR

(57) Abstract :
ABSTRACT IoT based Smart Device for Pollution Control and Traffic Management System This invention is a vehicle monitoring unit that can be fixed in vehicles. People whose occupation is on the sides of streets, are harmed or executed by road crashes. The thickness of the traffic around traffic intersections is estimated and data refreshed in the site. An Android app is grown with the goal that all the necessary data is effectively accessible. In this research work, we depict an IOT based alarm framework which distinguishes and tracks the Heavy traffic. Bizarre directions of Vehicle are recognized when the pictures of their Traffic are taken. The framework quickly imparts an admonition sign once a danger has been recognized. The framework runs on the Android smart telephones, which are mounted on Vehicle or on side of the road installations. An Android app is grown with the goal that all the necessary data is effectively accessible.

No. of Pages : 16 No. of Claims : 3

ABSTRACT

The present invention relates to the field of vehicle headlamp high beam shifting apparatus using light fidelity (LiFi) to avoid accidents while driving a vehicle at night time. Headlamp beam shifting apparatus (11) for vehicles comprising of at least a light beam sensing device with vehicle speed detection apparatus (21), signal transmission and light beam shifting arrangement (61) and light signal receiving and processing system (51) and a motorized lamp turning system (61) wherein the signals are transferred to the opposite vehicle through LiFi based wireless communication system.

FIG – 2

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COIMBATORE – 641035
(APPLICANT)

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ABSTRACT

The present invention relates to the field of data transmission through visible light communication system to ensure secured data transfer. The vehicle identification device with wireless communication system comprises a visible light communication unit, data receiving & processing means and cloud storage. Said vehicle controlling means sends the vehicle information to data transmitting means and the data transmitting means sends the vehicle information to data receiving & processing means through visible light.

FIG – 2

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Australian Government

IP Australia

CERTIFICATE OF GRANT

INNOVATION PATENT

Patent number: 2020102099

The Commissioner of Patents has granted the above patent on 30 September 2020, and certifies that the below particulars have been registered in the Register of Patents.

Name and address of patentee(s):

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AMANPREET KAUR of Associate Professor, University Institute of Computing Chandigarh University Gharaun, District Mohali, Punjab- 140413 India

Title of invention:

A Rule based Rootkit Detection Method using Machine Learning in Embedded IoT Devices

Name of inventor(s):

RAJ, MURUGANANTH GOPAL; P., BALAJI SRIKAANTH; J.K, PERIASAMY; M., SUJATHA; K., THAIYALNAYAKI; MANOCHA, AMIT KUMAR; M., SARAVANAN; R., KANIMOZHI; SINGH, GURPREET and KAUR, AMANPREET

Term of Patent:

Eight years from 2 September 2020

COMMONWEALTH OF AUSTRALIA AUSTRALIA PATENT OFFICE

Dated this 30th day of September 2020

Commissioner of Patents

PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

Australian Government

IP Australia

CERTIFICATE OF GRANT

INNOVATION PATENT

Patent number: 2020102099

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.

Dated this 30th day of September 2020

Commissioner of Patents

PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

Extracts from the Patents Act, 1990

Sect 120(1A) Infringement proceedings in respect of an innovation patent cannot be started unless the patent has been certified.

Sec 128 **Application for relief from unjustified threats**

(1) Where a person, by means of circulars, advertisements or otherwise, threatens a person with infringement proceedings or other similar proceedings a person aggrieved may apply to a prescribed court, or to another court having jurisdiction to hear and determine the application, for:

(a) a declaration that the threats are unjustifiable; and

(b) an injunction against the continuance of the threats; and

(c) the recovery of any damages sustained by the applicant as a result of the threats.

(2) Subsection (1) applies whether or not the person who made the threats is entitled to, or interested in, the patent or a patent application.

Sec 129A **Threats related to an innovation patent application or innovation patent and courts power to grant relief.**

Certain threats of infringement proceedings are always unjustifiable.

(1) If:

(a) a person:

(i) has applied for an innovation patent, but the application has not been determined; or

(ii) has an innovation patent that has not been certified; and

(b) the person, by means of circulars, advertisements or otherwise, threatens a person with infringement proceedings or other similar proceedings in respect of the patent applied for, or the patent, as the case may be;

then, for the purposes of an application for relief under section 128 by the person threatened, the threats are unjustifiable.

Courts power to grant relief in respect of threats made by the applicant for an innovation patent or the patentee of an uncertified innovation patent

(2) If an application under section 128 for relief relates to threats made in respect of an innovation patent that has not been certified or an application for an innovation patent, the court may grant the application the relief applied for.

Courts power to grant relief in respect of threats made by the patentee of certified innovation patent

(3) If an application under section 128 for relief relates to threats made in respect of a certified innovation patent, the court may grant the applicant the relief applied for unless the respondent satisfies the court that the acts about which the threats were made infringed, or would infringe, a claim that is not shown by the applicant to be invalid.

Schedule 1 **Dictionary**

certified, in respect of an innovation patent other than in section 19, means a certificate of examination issued by the Commissioner under paragraph 101E(e) in respect of the patent

I CLAIM;

1. Vehicle identification device with wireless communication system (101) comprises a visible light communication unit (111), data receiving & processing means (121) and cloud storage (131) **characterized in that**, said vehicle controlling means (112) sends the vehicle information to data transmitting means (116) and the data transmitting means (116) sends the vehicle information to data receiving & processing means (121) through visible light.

2. The vehicle identification device as claimed in claim 1, characterized in that, said visible light communication unit (111) comprises of at least a vehicle controlling means (112) and a data transmitting means (116).

3. The vehicle identification device as claimed in claim 1, characterized in that said vehicle controlling means (112) comprises of an inbuilt power backup (114), microcontroller (115) and user interface touch screen display (113).

4. The vehicle identification device as claimed in claim 1, characterized in that the Data receiving and processing means (121) comprises of photo detector (122), data amplification and processing means (123), user interface device (124) and inbuilt power supply (125) and said user interface device (124) is wirelessly connected to the cloud storage (131) through internet.

5. The method of working of Vehicle identification device with wireless communication system (101) comprises the method such as;
   - the data transfer enquiry mode is enabled at main user interface device (124) by the authorized person and the signal from said user interface device is transmitted to vehicle's main server through wireless communication;

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- Vehicle main server receives the radio frequency signal from the User Interface of authorized person and the signal is processed by vehicle microcontroller (115) ;
- The signal from vehicle microcontroller (115) is transmitted to vehicle user interface device (113) and enables the touch icon in the touch screen display to send the vehicular information;
- when the user touches the icon enabled in the screen for transmitting data from vehicle to authorized person, the microcontroller (115) sends the vehicle data to lamp driver (117);

Characterized in that, the electrical signal from controller is converted into binary data in the lamp driver (117) and encodes binary data to LED lamp (118) wherein said LED lamp transmits the binary data information to the Receiver User interface (124) through visible light such as photons.

6. The vehicle identification device as claimed in claim 1 and 6, characterized in that the receiving module has a photo detector for receiving the visible light signals from LED lamp and the received data is amplified and processed by amplifier and microcontroller and sent to the authorized person's user interface device.

7. The vehicle identification device as claimed in claim 1, characterized in that the wireless vehicle information transmission system comprises of two major parts such as vehicle data transmitting means (211) and vehicle data receiving means (221) and the Transmitting means (211) sends the vehicle information to the receiving means (221) through wireless communication module such as ZigBee.

8. The vehicle identification device as claimed in claim 1, characterized in that said transmitting means (211) on a vehicle comprises of inbuilt power backup

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(213), microcontroller (214), LCD display (212), Zigbee module (215) and transceiver (216).

9. The vehicle identification device as claimed in claim 1, characterized in that said vehicle information receiving means (221) comprises of LCD display (222), microcontroller (223), Zigbee (224) and transceiver (225).

Dated this 14th day of February 2018.

GOPALRAJ MURUGANANTH
POLLACHI – 642 001
(APPLICANT)

PATENT OFFICE CHENNAI 19/02/2018 15:21

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WE CLAIM:

1. A headlamp beam shifting apparatus (11) for vehicles comprising of at least a light beam sensing device with vehicle speed detection apparatus (21), signal transmission and light beam shifting arrangement (61) and light signal receiving and processing system (51) and a motorized lamp turning system (61) **wherein** the signals are transferred to the opposite vehicle through LiFi based wireless communication system.

2. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** said vehicle headlamp beam shifting system (21) comprises of two major units such as signal transmitting unit (22) and signal receiving unit (23).

3. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** the signal transmitting unit (22) comprises of light dependent resistor sensor (24), radar speed gun (25), lamp turning motor (26), inbuilt power backup (27), microcontroller (28), lamp driver (29), and LED lamp (30).

4. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** the signal receiving unit (23) comprises of a photo detector (41), amplifier and processor (42), microcontroller (43), inbuilt power supply (44), relay circuit (45), vehicle headlamp (46).

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5. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** the LiFi based vehicle headlamp control arrangement (51) comprises of light dependent resistor sensor (24), radar speed gun (25), LED lamp turning motor (26), inbuilt power supply (27), microcontroller (28), lamp driver (29), LED lamp (30), amplifier and processor (31), photo detector (32), relay circuit (33) which are connected with a set of vehicle head lamps (34).

6. The headlamp beam shifting apparatus (11) as claimed in claim 1, **wherein** the Lamp turning system (61) comprises of a motor (26), shaft (62), Lamp fixing holder (63), LED lamp (30) and lamp mounting cover (64).

7. The method of working of headlamp beam shifting apparatus (11) comprising the steps of;

- The light dependent resistor senses the intensity of light beam received from the opposite vehicle and the sensed signal is sent to the microcontroller for processing;
- Microcontroller checks the light intensity level and compares the value from the standard parameters;
- If the sensor received the High beam of light, the controller sends the signal to lamp driver for reducing the light beam of opposite vehicle and the lamp driver converts electrical signal into binary signal and it is sent

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to the vehicle head lamp and the vehicle head lamp transfer the signal to the opposite vehicle through light;

- the Photo detector in the opposite vehicle receives the light signal and it is transferred to amplifier and processor to process the signal from photo detector and sends the signal to the vehicle microcontroller;
- The Microcontroller sends the signal to relay circuit for reducing the light beam intensity and the relay circuit controls and regulates the light beam intensity according to the information from microcontroller.
- Microcontroller also activates the radar speed gun to measure the speed of the vehicle and the microcontroller process the signal from radar speed gun and sends the signal to lamp turning motor according to vehicle speed; the Lamp turning motor turns the lamp based on the information from microcontroller.
- Once the receiving signal is disconnected, the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position.

Dated this 04th day of April 2018

AMIRTHALINGAM JOTHI MURUGAN
COIMBATORE – 641035
(APPLICANT)

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ET523090144IN

Apr 04, 2018

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To
The Controller of Patents,
The Patent Office,
Chennai.

Dear Sir,

Re: New Patent Application as Complete specification
Title: "HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME"
Applicant: AMIRTHALINGAM, Jothimurugan

Please find enclosed a new Complete Patent Application entitled "HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME". I enclose herewith the following documents:

(a) Application in Form – 1 (in duplicate)
(b) Form – 2 with Complete specification (2 copies). No. of pages 19 (excluding drawings)
(c) Drawings (2 copies), No of sheets 06
(d) Statement and Undertaking on Form 3 (in duplicate)
(e) Request for publication on Form 9 (in duplicate)
(f) Request for Examination on Form 18 (in duplicate)

FEES

(g) Fee for excess pages exceeding 30	= NIL
(h) Fee for Application	= Rs. 1,750
(i) Fee for request for publication	= Rs. 2,750
(j) Fee for Examination request	= Rs. 4,400

Fee Rs. 8,900/- vide Demand draft No. 689123 dated 28/03/2018 on Canara Bank.

Please take the application on record and advise us of any further documents/information required for the purpose of this application.

Yours faithfully,

AMIRTHALINGAM JOTHI MURUGAN
(Applicant)
Encl: as above

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05-Apr-2018/26339/201841012997/Other Patent Document

FT52308233BN

700208715

D/11277

Feb 14, 2018

To
The Controller of Patents,
The Patent Office,
Chennai.

Dear Sir,

Re: New Patent Application as Complete specification
Title: "VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF"
Applicant: GOPALRAJ, Murugananth

Please find enclosed a new Complete Patent Application entitled "VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF". I enclose here with the following documents:

(a) Application in Form – 1 (in duplicate)
(b) Form – 2 with complete specification (2 copies). No. of pages 16 (excluding drawings)
(c) Drawings (2 copies), No of sheets 04
(d) Statement and Undertaking on Form 3 (in duplicate)
(e) Request for Earlier publication in Form 9 (in Duplicate)
(f) Request for Examination in Form 18 (in Duplicate)

FEES

(g) Fee for excess pages exceeding 30 = NIL
(h) Fee for Application = Rs. 8,900

Fee Rs. 8,900/- vide Demand draft No. 575649 dated 13/02/2018 on State Bank of India.

Please take the application on record and advise us of any further documents/information required for the purpose of this application.

Yours faithfully,

GOPALRAJ MURUGANANTH
(Applicant)
Encl: as above

PATENT OFFICE CHENNAI 19/02/2018 15:21

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TECHNICAL FIELD OF THE INVENTION

The present invention generally relates to the field of vehicle lighting system. More particularly, the present invention relates to the field of vehicle headlamp high beam shifting system using light fidelity (LiFi) to avoid accidents while driving a vehicle at night time.

BACKGROUND OF THE INVENTION

During night time when the vehicles are about to cross each other, the driver has an option to select the switch for making light OFF the highly focused headlamp suppressing the intensity of high light on the eyes of the drivers. It helps avoiding accidents during travel in night when the combined brightness due to head lights of both the vehicles crossing each other from the opposite side. This is highly unacceptable and unreliable as it is as much important to switch OFF the dimmer after passing off the vehicles as it is to turn ON the dimmer when the vehicles are about to face each other. While driving at night, headlights are used for visualization of objects approaching the vehicle. When a vehicle approaches from the opposite direction, the driver faces temporary blindness when dazzling light fall on the eyes due to the incident bright source of light. This delays the response by the driver leading to increased incidence of road accidents during night.

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The combined brightness of such lights may cause irritation to the driver who may lose control on the vehicle. Sometimes it happens that the user neglects or forgets to switch ON dimmer light which may result into accident due to light intensity in eyes of the driver of vehicles crossing each other. If the vehicle head lamp is in high beam it may affects the opposite vehicle driver. In some cases, some people are lazy to dim his vehicle headlamp it may results to accidents.

Many systems have been developed to mitigate this problem but the conventional systems are not highly sensitive to the varying intensity of the light. A method of existing disclosure describes a system for switching/regulating the vehicle headlamp beam using radio frequency communication system. Another method of existing disclosure describes that, the vehicle headlamp high beam is reduced by relay driver using light dependent resistor (LDR) sensor. Indian patent application 201621035295 describes a sensor based automatic headlight beam shifter. This system provides a solution to avoid road accidents caused due to 'Troxler effect'. Said an automatic headlight beam shifter system for a vehicle that functions on the output of a light sensor. The system comprises of a LDR sensor connected to a microcontroller through a relay driver, which change the function of the vehicular headlights depending on the intensity of the headlight of the approaching vehicle.

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US patent application US5086253 describes an automatic dimmer apparatus. An apparatus within a vehicle including a plurality of high beams in electrical communication with an automatic circuit to direct voltage to each associated high beam, wherein a phototransistor is arranged in parallel circuitry to a relay coil and resistor, with the junction transistor arranged to interface between the first and the second parallel circuit, including the photo-transistor and adjustable resistor respectively. A modified detector circuit includes a second resistor in series with the resistor, and a third resistor in parallel relationship to the relay coil to effect a time delay in actuation of the high beam members of the vehicle. A third junction transistor is arranged in a third circuit parallel to the first and second circuit to direct current to the respective high beam for increased sensitivity relative to the incoming light source from a remote vehicle.

In general prior art, the vehicle headlamp high beam is reduced by a regulator device for reducing the intensity of a headlamp. But, the major problem arises while regulating the light beam of a headlamp is the signal transmitting time is more for regulating the high beam, while changing the intensity of a light. The present invention is depicted to solve the above problem. The vehicle headlamp intensity is regulated by using visible light communication. This system provides efficient communication for regulating the beam.

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OBJECTIVE OF THE INVENTION

The primary object of the present invention is to provide an automatic headlight beam shifter for vehicles when oncoming and preceding vehicles are detected on the road.

Another object of the present invention is to provide a system for detecting the intensity of light from the headlight of the approaching vehicle.

Another object of the present invention is to provide an in-built radar speed gun for measuring the speed of approaching vehicle.

Yet another object of the present invention is to provide a visible light communication such as Light fidelity (LiFi) based beam shifting system for sending signal faster and regulating the headlamp quickly.

Those and another advancement of the present invention is to provide a system with low reliability, cheaper and faster data transmission rate to the vehicle for ensuring the safety to the driver and the passengers of the vehicle while night driving.

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SUMMARY OF THE INVENTION

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

According to the main aspect of the present invention, the A headlamp beam shifting apparatus for vehicles comprising of at least a light beam sensing device with vehicle speed detection apparatus, signal transmission and light beam shifting arrangement and light signal receiving and processing system and a motorized lamp turning system, wherein the signals are transferred to the opposite vehicle through LiFi based wireless communication system.

According to the another aspect of the present invention, said vehicle headlamp beam shifting apparatus comprises of two major units such as signal transmitting unit and signal receiving unit. The signal transmitting unit comprises of light dependent resistor sensor, radar speed gun, lamp turning motor, inbuilt power backup, microcontroller, lamp driver, and LED lamp. The signal receiving unit comprises of a photo detector, amplifier and processor, microcontroller, inbuilt power supply, relay circuit, vehicle headlamp.

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According to yet another aspect of the present invention, the LiFi based vehicle headlamp control arrangement comprises of light dependent resistor sensor, radar speed gun, LED lamp turning motor, inbuilt power supply, microcontroller, lamp driver, LED lamp, amplifier and processor, photo detector, relay circuit which are connected with a set of vehicle head lamps. The Lamp turning system comprises of a motor, shaft, Lamp fixing holder, LED lamp and lamp mounting cover.

According to the method of working of the present invention, the method of working of headlamp beam shifting apparatus comprising the steps that the light dependent resistor senses the intensity of light beam received from the opposite vehicle and the sensed signal is sent to the microcontroller for processing. Microcontroller checks the light intensity level and compares the value from the standard parameters. If the sensor received the High beam of light, the controller sends the signal to lamp driver for reducing the light beam of opposite vehicle and the lamp driver converts electrical signal into binary signal and it is sent to the vehicle head lamp and the vehicle head lamp transfer the signal to the opposite vehicle through light. The Photo detector in the opposite vehicle receives the light signal and it is transferred to amplifier and processor to process the signal from photo detector and sends the signal to the vehicle microcontroller. The Microcontroller sends the signal to relay circuit for reducing the light beam

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intensity and the relay circuit controls and regulates the light beam intensity according to the information from microcontroller.

Microcontroller also activates the radar speed gun to measure the speed of the vehicle and the microcontroller process the signal from radar speed gun and sends the signal to lamp turning motor according to vehicle speed; the Lamp turning motor turns the lamp based on the information from microcontroller. Once the receiving signal is disconnected, the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position.

These and other advantages of the present invention will become readily apparent from the following detailed description read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 depicts the schematic view of problem faced by the driver while driving vehicle at night time (1) in accordance with the present invention

Figure 2 depicts the schematic view of light fidelity (LiFi) based vehicle headlamp beam shifting system in a vehicle in accordance with the embodiment of present invention.

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Figure 3 depicts the block diagram of control unit of vehicle head lamp beam shifter in accordance with the present invention.

Figure 4 describes the block diagram of vehicle headlamp beam shifter using light fidelity (LiFi) in accordance with the present invention.

Figure 5 depicts the schematic view of motorized lamp turning system for sending data through visible light in accordance with the present invention.

Figure 6 illustrates the flow chart of method of working of LiFi based vehicle headlamp beam shifter in accordance with the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

Features that are described and/or illustrated with respect to one embodiment may be used in the same way or in a similar way in one or more other

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embodiments and/or in combination with or instead of the features of the other embodiments.

Figure 1 depicts the schematic view (1) of problem faced by the driver while driving vehicle at night time in accordance with the present invention. The existing system describes the driver, while driving a vehicle (2) at night time, the vehicle approaches by another opposite vehicle (3). The approaching vehicle (3) may have a high beam of light which may affect the vision of driver especially at night time. The light beam causes temporary blindness to the human eyes and it may lead to accidents.

Figure 2 depicts the schematic view (11) of Li-Fi based headlamp beam shifting system in a vehicle in accordance with the embodiment of present invention. The headlamp beam shifting system (11) according to the present invention comprises of a light beam sensing with vehicle speed detection apparatus (21), signal transmission and light beam shifting arrangement (61) and light signal receiving and processing system (51). Light beam sensing and vehicle speed detection apparatus (21) is utilized to detect the vehicle speed and light beam from approaching vehicle. Signal transmission and light beam shifting arrangement (61) is utilized to transfer the light signals to the approaching vehicle. Light signal receiving and processing system (51) is utilized to receive the visible light signal

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from approaching vehicle based on the signal from approaching vehicle the intensity of light beam is regulated.

Figure 3 depicts the block diagram of LiFi based vehicle headlamp control arrangement (51) in accordance with the present invention. LiFi based vehicle headlamp control arrangement (51) comprises of light dependent resistor sensor (24), radar speed gun (25), LED lamp turning motor (26), inbuilt power supply (27), microcontroller (28), lamp driver (29), LED lamp (30), amplifier and processor (31), photo detector (32), relay circuit (33) and a set of vehicle head lamp (34). Microcontroller (28) is connected with light dependent resistor sensor (24) for measuring the approaching vehicle light intensity. Radar speed gun (25) is connected to the control unit (28) for measuring the approaching vehicle speed. Lamp turning motor (26) is connected to the controller (28) for turning the LED lamp according to the approaching vehicle movement. The inbuilt power supply (27) is connected with the microcontroller (28) for providing electric power to the circuit. Lamp driver (29) is connected to the microcontroller (28) for sending the data to opposite vehicle. LED lamp (30) is connected to the lamp driver (29) for providing light and send data to opposite vehicle. Relay circuit (33) is connected to the vehicle headlamp (34) for regulating the light beam intensity. Photo detector (32) is connected to the amplifier and processor (31) for receiving the light signal from opposite vehicle. The amplifier and processor (31) is connected to the microcontroller (28) for processing the signal and transferred to the control unit.

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Figure 4 depicts the block diagram of vehicle headlamp beam shifter using Light fidelity (LiFi) (21) in accordance with the present invention. Vehicle headlamp beam shifting system comprises of two major units such as signal transmitting unit (22) and signal receiving unit (23). The signal transmitting unit (22) comprises of light dependent resistor sensor (24), radar speed gun (25), lamp turning motor (26), inbuilt power backup (27), microcontroller (28), lamp driver (29), and LED lamp (30). Light dependent resistor sensor (24) is connected to the microcontroller (28) for sensing light beam and transmitting the signals. The radar speed gun (25) measures the approaching vehicle speed and send signal to microcontroller (28). Lamp turning motor (26) is connected to the microcontroller (28) according to the signals from microcontroller, LED lamp turns (30) towards vehicle direction. Inbuilt power backup (27) in a vehicle is connected to the microcontroller (28) for providing power supply. Microcontroller (28) is connected to the lamp driver (29) for sending the signal. The lamp driver (29) is connected to the LED lamp (30). The electrical signal from microcontroller (28) is converted into binary data and it is sent to the vehicle LED lamp (30) through lamp driver (29).

The signal receiving unit (23) comprise of a photo detector (41), amplifier and processor (42), microcontroller (43), inbuilt power supply (44), relay circuit (45), vehicle headlamp (46). Photo detector (41) is connected to the amplifier and processor (42) for processing the visible light signal from vehicle LED lamp (30).

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The binary data from photo detector (41) is converted into electrical signal. Said amplifier and processor (42) is connected to the microcontroller (43). The microcontroller (43) is connected to the relay circuit (45) for regulating the light beam of the vehicle head lamp (46). The vehicle head lamp (46) is connected to the relay circuit (45). Inbuilt power supply (44) is connected to the microcontroller (43).

Figure 5 depicts the schematic view of motorized lamp turning system (61) for sending data through visible light in accordance with the present invention. Lamp turning system comprises of motor (26), shaft (62), Lamp fixing holder (63), LED lamp (30) and lamp mounting cover (64). The motor (26) is mounted near to the vehicle front head lamp. The motor shaft (62) is connected to the lamp fixing holder (63). The LED lamp (30) is mounted inside the lamp mounting cover (64). When the signal coming from microcontroller the lamp turning motor (26) turns the LED lamp (30).

Figure 6 illustrates the flow chart of working method of LiFi based head lamp control system in accordance with the present invention. When a vehicle is driven at night time, usually many vehicles crossing in opposite direction. In the present invention, the light dependent resistor is mounted in the vehicle for sensing the light beam from opposite vehicle. It senses the intensity of light beam received from the opposite vehicle and the sensed signal is sent to the microcontroller for

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processing. Microcontroller checks the light intensity level and compares the value from the standard parameters. If the intensity of light beam is within the accepted limit; the sensor continuously checks the approaching vehicle intensity.

If the sensor received the High beam of light, the controller sends the signal to lamp driver for reducing the light beam of opposite vehicle. The lamp driver converts electrical signal into binary signal and it is sent to the vehicle head lamp. Vehicle head lamp transfer the signal through light. Photo detector receives the light signal from opposite vehicle and it is transferred to amplifier and processor. The amplifier and processor process the signal from photo detector and sends the signal to the vehicle microcontroller. Microcontroller sends the signal to relay circuit for reducing the light beam intensity. The relay circuit controls and regulates the light beam intensity according to the information from microcontroller. Once the receiving signal is disconnected the light beam intensity is set as an original position.

During the light beam sensing time, microcontroller also activates the radar speed gun to measure the speed of the vehicle. The radar speed gun measures the speed of the approaching vehicle and send the data to the microcontroller. The microcontroller process the signal from radar speed gun and sends the signal to lamp turning motor according to vehicle speed. Lamp turning motor turns the lamp based on the information from microcontroller. Once the receiving signal is

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disconnected, the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position. The process is completed when receiving signal is disconnected from light dependent resistor (LDR) sensor.

In view of the present disclosure which describes preferred and best modes for providing an apparatus for mounting and dismounting the luminescent devices. Modifications and variations would present themselves to those skilled in the art without departing from the scope and spirit of this invention. Any modifications and variations coming within the meaning and range of equivalency are considered within the scope.

Dated 04th day of April 2018.

AMIRTHALINGAM JOTHI MURUGAN
COIMBATORE – 641035
(APPLICANT)

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FIELD OF THE INVENTION

The present invention generally relates to the field of vehicle identification system using wireless communication device. More particularly, the present invention relates to the field of data transmission through visible light communication system to ensure secured data transfer.

BACKGROUND OF THE INVENTION

With the widespread use of transport vehicle in India, vehicle owners or traffic police or regional transport authority need to collect and learn a lot of drivers and vehicle data base such as vehicle registration certificate, engine number, license plate number, driver information, vehicle insurance information, pollution under control certificate, etc.

With the rapid development of automobile industry, the total number of vehicles in the country is constantly expanding, with more and more fake documents, smuggled vehicles and scrapped vehicles coming along, as well as forged or altered vehicle driving documents to evade motor vehicles Annual inspection of drivers' licenses and other acts and incidents often occur. At present, the documents are maintained in the form of hard copies. The authorized personnel checks all the document by manually. It leads to some problems like manual error, data loss, malfunctions and storage of documents for a long period. Nowadays, collection of vehicle and driver's documents by police department and transport departments needs much effort and time.

To solve the above depicted problem diverse methods and various measures have taken. For example, an RFID based vehicle data collection system is disclosed in the existing art. It consists of an RFID tag, RFID reader and user interface device. RFID data storage medium is mounted on a vehicle. The storage medium has unique ID. It is only accessed by authorized persons like traffic police and regional transport authority, law enforcement officials, etc. Authorized person

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has an RFID readable user interface device. It reads the radio frequency signal emitted from RFID tag mounted on a vehicle. The authorized person collects the vehicle data base and driver database such as registration certificate, insurance, vehicle owner information and pollution under control certificate, etc.

Another method of disclosure describes the smart card based vehicular data base collection system. The vehicle driver has a smart card or RFID tag. The vehicle information's are encoded in a tag. The smart card contains vehicle information's like registration certificate, insurance and pollution under control certificate, etc. Law-enforcement officials have a swiping device for getting the vehicular data. Here the major drawback of this system is the radio frequency identification tag signal is accessible by another RFID reader. So, there are chances that for anyone can collect the data and chances for misusing it and therefore this method is not suitable for secured data transmission.

Indian patent application 201621042426 is describes an intelligent vehicle data base management and access system. It focusses on centralization of vehicle database and automate the existing pollution under control certificate issuing, renewing and checking process. Radio frequency identification tags are used as a smart card with unique identification code for accessing the vehicular data through internet and fill the petrol in a fuel station using PUC smart card. Here the smart card is used to fill the fuel in a vehicle at fuel station. It is not convenient to keep the smart card at all time when filling the fuel. If the card is broken or the card or lost, the user neither be able fill the fuel nor to get the vehicle information.

US patent application 2006292984 is describes an RFID vehicle tracking system using mobile transceivers and stationary responders. Vehicle tracking system using radio frequency identification transponders and RFID transceiver, which is attached to a moving vehicle to collect vehicle location data. Whenever the vehicle comes near by the transceiver, the transponder sends the location and vehicle

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information through internet using mobile communication. The major drawback of the above depicted system is that, the radio frequency signals from RFID tag is readable by another RFID reader and therefore it is not suitable for secured data transmission.

Most of the existing disclosure describes the methods of transmitting data through radio frequency identification (RFID) system. The data from vehicle is transferred only through RFID transponder which is disadvantageous. The data may accessible by another RFID reader. It leads to lose the vehicle information and it is not suitable for secured data transfer. Another method of data transfer is smart card based vehicle information sharing system. When the card is lost by driver or it broken or it leads to misuse by some other person.

The present invention is depicted to solve the problem faced by existing disclosure. The vehicle information transmission system by radio frequency identification system (RFID) is replaced by visible light communication for ensuring secured data transmission.

OBJECTIVE OF THE INVENTION

The primary object of the present invention is to overcome and solve the above problem of transmitting data from vehicle to law-enforcement officials in the existing art.

Another object of the present invention is to provide wireless communication device for transmitting vehicular information to authorized person through wireless communication module such as ZigBee.

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Still another object of the present invention is to provide an improved method of vehicle data transmission system using visible light communication technology such as light fidelity (Li-Fi) for secured data transmission.

Yet another object of the present invention is to digitalize the vehicular information checking process to reduce the vehicle information checking time at check post.

The present invention is aimed to eliminate the usage of hard copies of vehicle information such as registration certificate, insurance, vehicle information and pollution under control certificate and thereby eliminating the need of hard copies of documents which is difficult to maintain for long period.

Those and another advancement of the present invention is to check the all other documents about the vehicle are verified at a time, the vehicle theft can be detected easily and to identify the fake documents easily. Also it supports to find the expiry dates of all documents such as pollution certificate and vehicle insurance.

SUMMARY OF THE INVENTION

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

According to the main aspect of the present invention, a vehicle identification device with wireless communication system comprises a visible light communication unit, data receiving & processing means and cloud storage. Said vehicle controlling means sends the vehicle information to data transmitting

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means and the data transmitting means sends the vehicle information to data receiving & processing means through visible light. Said visible light communication unit comprises of at least a vehicle controlling means and a data transmitting means and the data receiving and processing means is connected to the cloud server via user interface device through internet. The vehicle controlling means comprises of an inbuilt power backup, microcontroller and user interface touch screen display.

According to another aspect of the present invention, the Data receiving and processing means comprises of photo detector, data amplification and processing means, user interface device and an inbuilt power supply. Said user interface device is wirelessly connected to the cloud storage through internet.

According to the method of working of Vehicle identification device with wireless communication system comprises the method such as, the data transfer enquiry mode is enabled at main user interface device by the authorized person and the signal from said user interface device is transmitted to vehicle's main server through wireless communication. The vehicle main server receives the radio frequency signal from the User Interface of authorized person and the signal is processed by vehicle microcontroller. The signal from vehicle microcontroller is transmitted to vehicle user interface device and enables the touch icon in the touch screen display to send the vehicular information. When the user touches the icon enabled in the screen for transmitting data from vehicle to authorized person, the microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted into binary data in the lamp driver and encodes binary data to LED lamp wherein said LED lamp transmits the binary data information to the Receiver User interface through visible light such as photons. The receiving module has a photo detector for receiving the visible light signals from LED lamp and the received data is amplified and processed by amplifier and microcontroller and sent to the authorized person's user interface device.

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According to another aspect of the present invention, the wireless vehicle information transmission system comprises of two major parts such as vehicle data transmitting means and vehicle data receiving means. The Transmitting means sends the vehicle information to the receiving means through wireless communication module such as ZigBee. Said transmitting means on a vehicle comprises of inbuilt power backup, microcontroller, LCD display, ZigBee module and a transceiver. Said vehicle information receiving means comprises of a LCD display, microcontroller, ZigBee and a transceiver.

These and other advantages of the present invention will become readily apparent from the following detailed description read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other aspects, features, and advantages of certain exemplary embodiment of the present invention will be more apparent from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 depicts the block diagram of Radio Frequency Identification (RFID) system based vehicle information transmission system in the existing art.

Figure 2 depicts the block diagram of visible light communication such as light fidelity (Li-Fi) based vehicle information transmission system in accordance with the embodiment of present invention.

Figure 3 illustrates the flowchart of light fidelity based vehicle information transmission system in accordance with the present invention.

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Figure 4 depicts the block diagram of wireless vehicle information transmission system using ZigBee protocol in accordance with another embodiment of the present invention.

Persons skilled in the art will appreciate that elements in the figures are illustrated for simplicity and clarity and may have not been drawn to scale. For example, the dimensions of some of the elements in the figure may be exaggerated relative to other elements to help to improve understanding of various exemplary embodiments of the present disclosure. Throughout the drawings, it should be noted that like reference numbers are used to depict the same or similar elements, features, and structures.

DETAILED DESCRIPTION OF THE INVENTION

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

Features that are described and/or illustrated with respect to one embodiment may be used in the same way or in a similar way in one or more other embodiments and/or in combination with or instead of the features of the other embodiments.

Figure 1 depicts the block diagram of Radio Frequency Identification system based vehicle information transmission system (1) present in the existing art. This system comprises of three segments such as transmitting means (2), receiving means (3) and cloud storage (8). Transmitting means (2) is called as vehicle data transmitting module such as RFID tag and receiving means (3) called as

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authorized person's data receiving module. Transmitting means (2) comprises of vehicle server such as microcontroller (4) and RFID tag (5) are mounted in the vehicle. Receiving means (3) comprises of RFID reader (6) and user interface device (7). The microcontroller (4) is connected to the RFID tag (5) and the vehicle information is encoded in a RFID tag. Law enforcement officer have a receiving module such as RFID reader (6). The reader (6) reads the wireless signals from RFID tag and sends the signal to user interface device. User interface device is connected to the cloud server (8). The authorized person can verify the data from vehicle server through RFID reader and vehicle information stored in the cloud sever (8) through internet.

Figure 2 depicts the block diagram of visible light communication system such as light fidelity (Li-Fi) based vehicle identification device (101) in accordance with the preferred embodiment of present invention. Said vehicle identification device (101) is mounted with visible light communication unit (111), data receiving & processing means (121) and cloud storage (131). The visible light communication unit (111) comprises of at least a vehicle controlling means (112) and a data transmitting means (116). Said vehicle controlling means (112) sends the vehicle information to data transmitting means (116) through wire. The data transmitting means (116) sends the vehicle information to data receiving & processing means (121) through visible light. The data receiving and processing means (121) is connected to the cloud server (131) via user interface device through internet for verifying the data collected from user.

Vehicle controlling means (112) comprises of an inbuilt power backup (114), microcontroller (115) and user interface touch screen display (113). The electric power from inbuilt power backup (114) is sent to the microcontroller (115). The microcontroller is connected to the user interface device (113). The vehicle information such as registration certificate, insurance and pollution certificate are stored in the microcontroller (115). The user interface for example a touch screen

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display (113) is used to enable a touch icon when the authorized person send the signal. Microcontroller (115) is connected to the lamp driver (117) for transmitting vehicle information to authorized person. Said lamp driver (117) is connected to the LED lamp (118). Here electrical signal is converted into visible light signal such as photons. When the user touches the icon the data is encoded into the light driver and transmitted through LED lamp.

Further with reference to Figure 2, the Data receiving and processing means (121) comprises of photo detector (122), data amplification and processing means (123), user interface device (124) and inbuilt power supply (125). Photo detector (122) is used to receive the photons from LED lamp (118) and convert it as an electrical signal. Said photo detector (122) is connected to the data amplification and processing unit (123). This unit is used to amplify the signals from LED lamp (118) at faster rate. The amplification unit is connected to user interface device for visualize the vehicle information document. Inbuilt power backup (125) is connected to the user interface device (124). The user interface device (124) is wirelessly connected to the cloud storage (131) through internet.

Figure 3 illustrates the flowchart which describes the method of working of light fidelity based vehicle information transmission system in accordance with the present invention. The authorized person who see the vehicle in a vehicle checking area enables the data transfer enquiry mode at main user interface device. Signal from user interface device is transmitted to vehicle main server (Not shown) through wireless communication. Vehicle main server receives the radio frequency signal from authorized person that signal is processed by vehicle microcontroller. The signal from vehicle microcontroller is transmitted to vehicle user interface device touch screen display. It enables the touch icon to send the vehicular information. The user touches the icon enabled in the screen for transmitting data from vehicle to authorized person. The microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted

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into binary data in a lamp driver. The driver encodes binary data to LED lamp. Said the LED lamp gets energized and starts glowing, the binary data information is transmitted through visible light such as photons.

Receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. The authorized person's user interface device is connected to the cloud storage. The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move. If the data are not correct, he shall send a communication to the vehicle microcontroller and initiate a command to stop the ignition. Once the microcontroller receives the signal, it stops the engine ignition power supply and engine goes to OFF mode. The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily.

Figure 4 depicts the block diagram of wireless vehicle information transmission system using Zigbee (201) in accordance with another embodiment of present invention. This system comprises of two major parts vehicle data transmitting means (211) and vehicle data receiving means (221). Transmitting means (211) sends the vehicle information to the receiving means (221) through wireless communication module such as Zigbee. The transmitting means (211) on a vehicle comprises of inbuilt power backup (213), microcontroller (214), LCD display (212), Zigbee module (215) and transceiver (216). The power backup (213) is connected to the microcontroller (214). The vehicle information's are stored in a microcontroller and it is displayed in a LCD display (212) mounted in a vehicle. The wireless Zigbee module (215) is connected to the microcontroller (214) for transmitting the vehicle information to law enforcement officer's user

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interface device. The transmitting means connected to the ZigBee module for transmitting data from electrical signals to radio frequency signal.

Vehicle information receiving means (221) comprises of LCD display (222), microcontroller (223), ZigBee (224) and transceiver (225). The microcontroller (223) is connected with LCD display (222) and wireless data transmitting module ZigBee (224). The transceiver (225) receives the radio frequency signal from vehicle data transmitting means and sends the signal to the microcontroller. Microcontroller shows the vehicle information in a digital display.

In view of the present disclosure which describes preferred and best modes for providing Vehicle identification device with wireless communication system, modifications and variations would present themselves to those skilled in the art without departing from the scope and spirit of this invention. Any modifications and variations coming within the meaning and range of equivalency are considered within the scope.

Dated this 14th day of February 2018.

GOPALRAJ MURUGANANTH
POLLACHI – 642 001
(APPLICANT)

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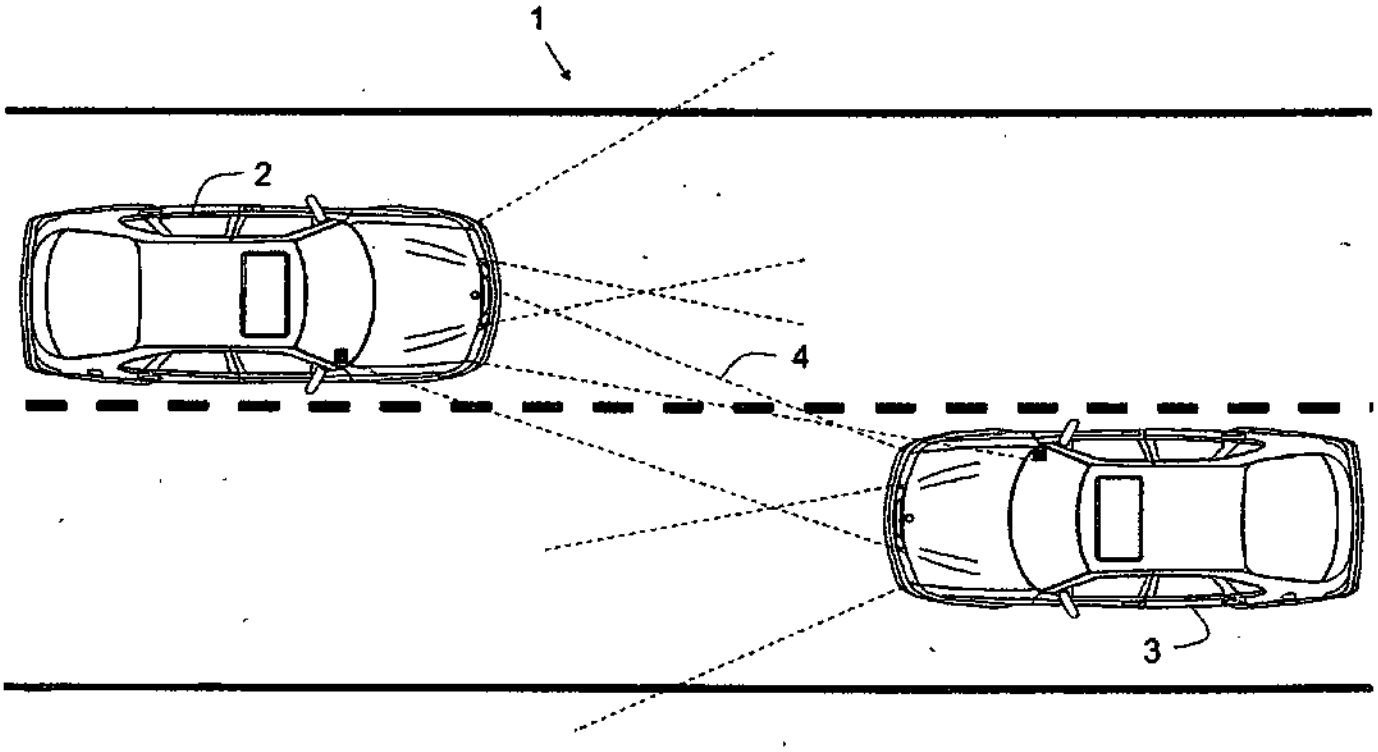


FIG 1

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AMIRTHALINGAM JOTHI MURUGAN
APPLICATION NUMBER:

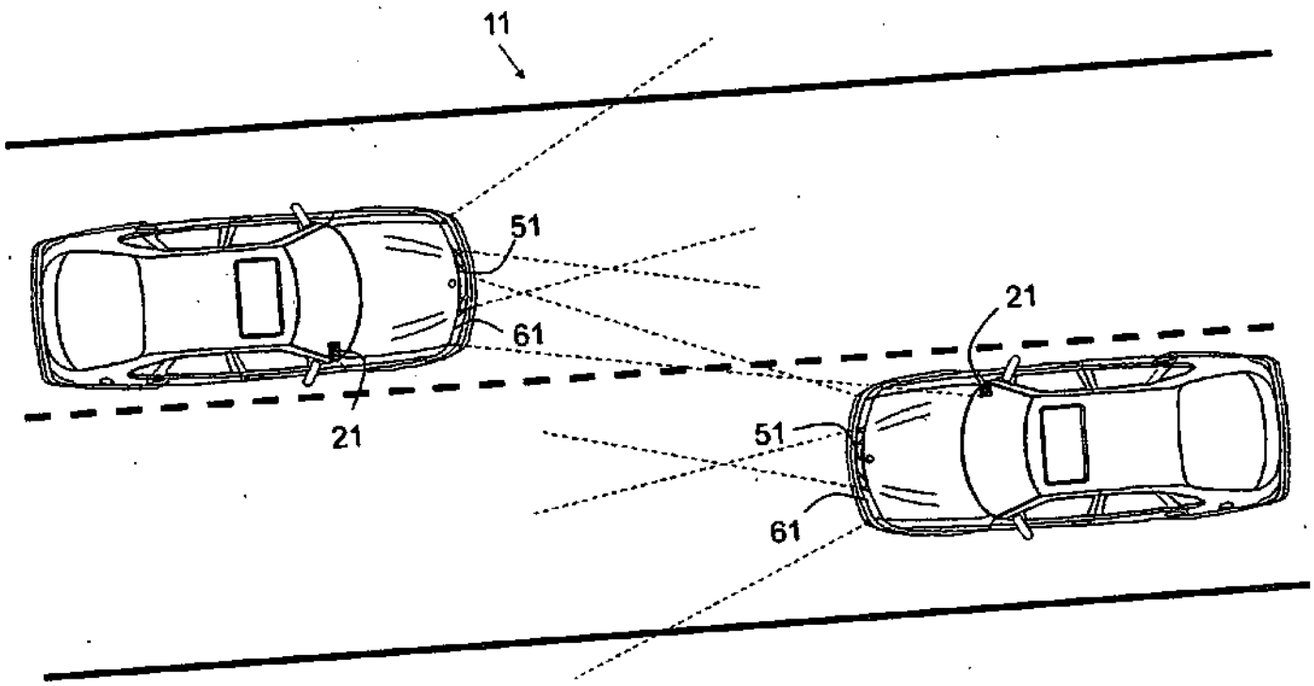


FIG 2

AMIRTHALINGAM JOTHI MURUGAN
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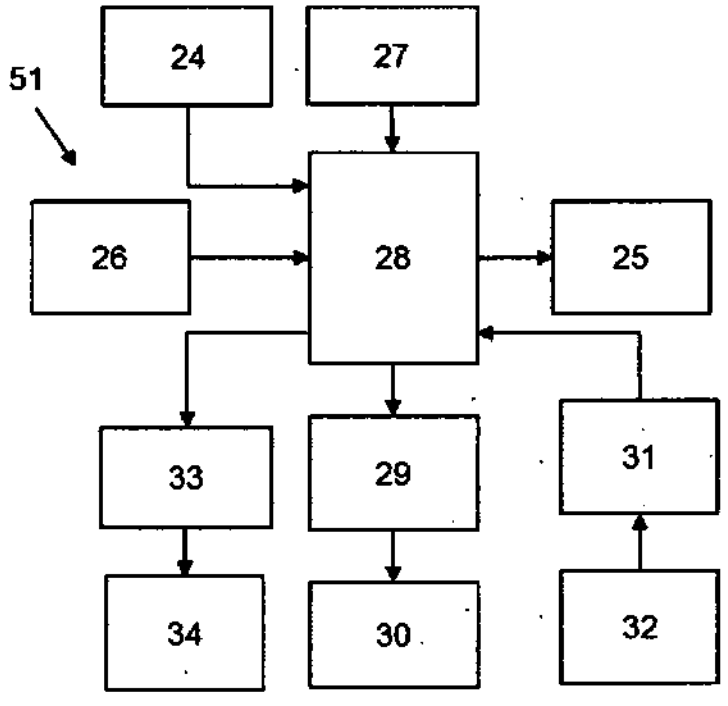


FIG 3

AMIRTHALINGAM JOTHI MURUGAN
COIMBATORE - 641035
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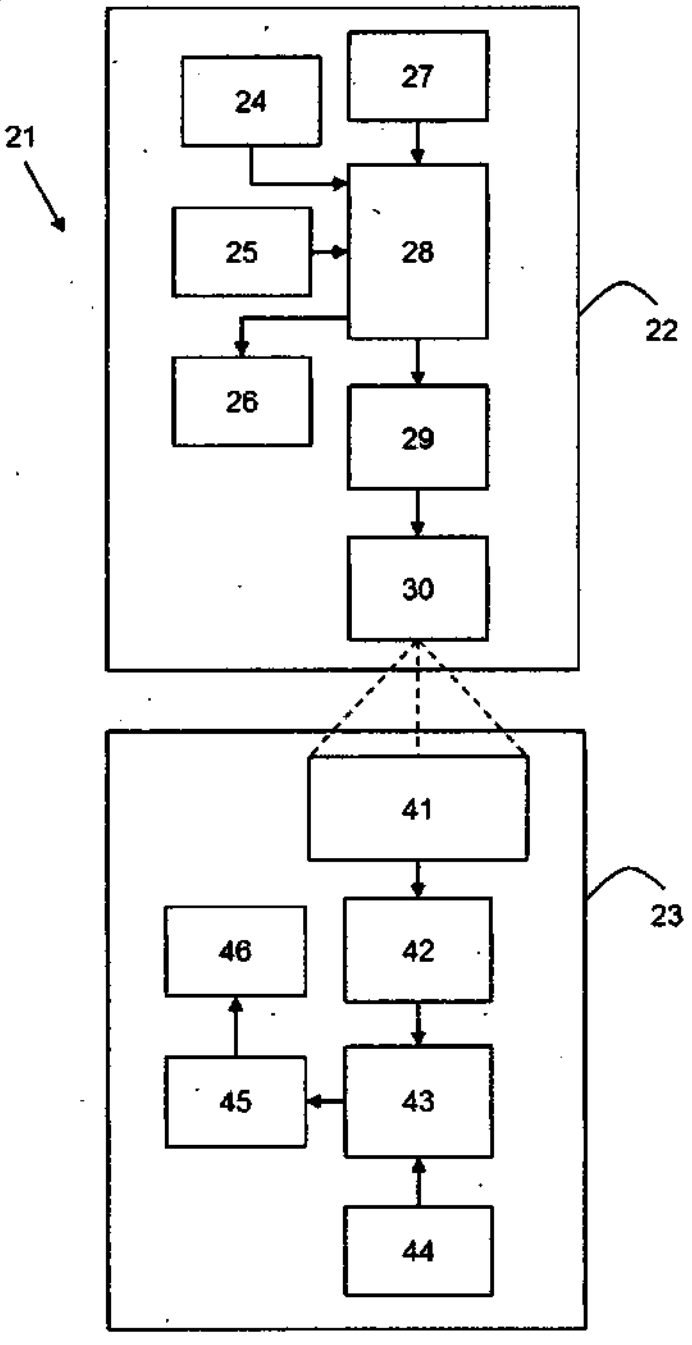


FIG 4

AMIRTHALINGAM JOTHI MURUGAN
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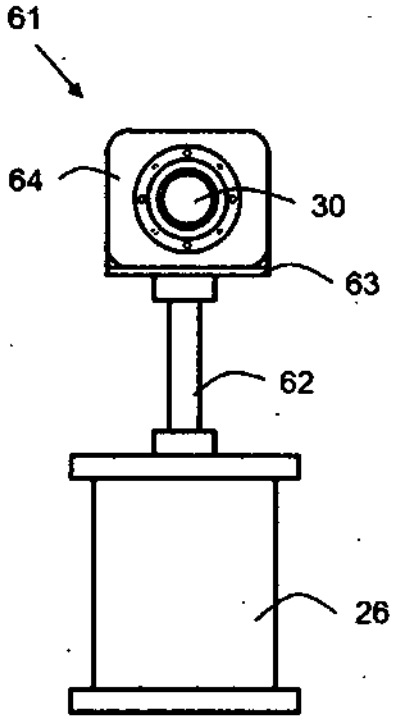


FIG 5

AMIRTHALINGAM JOTHI MURUGAN
COIMBATORE - 641035
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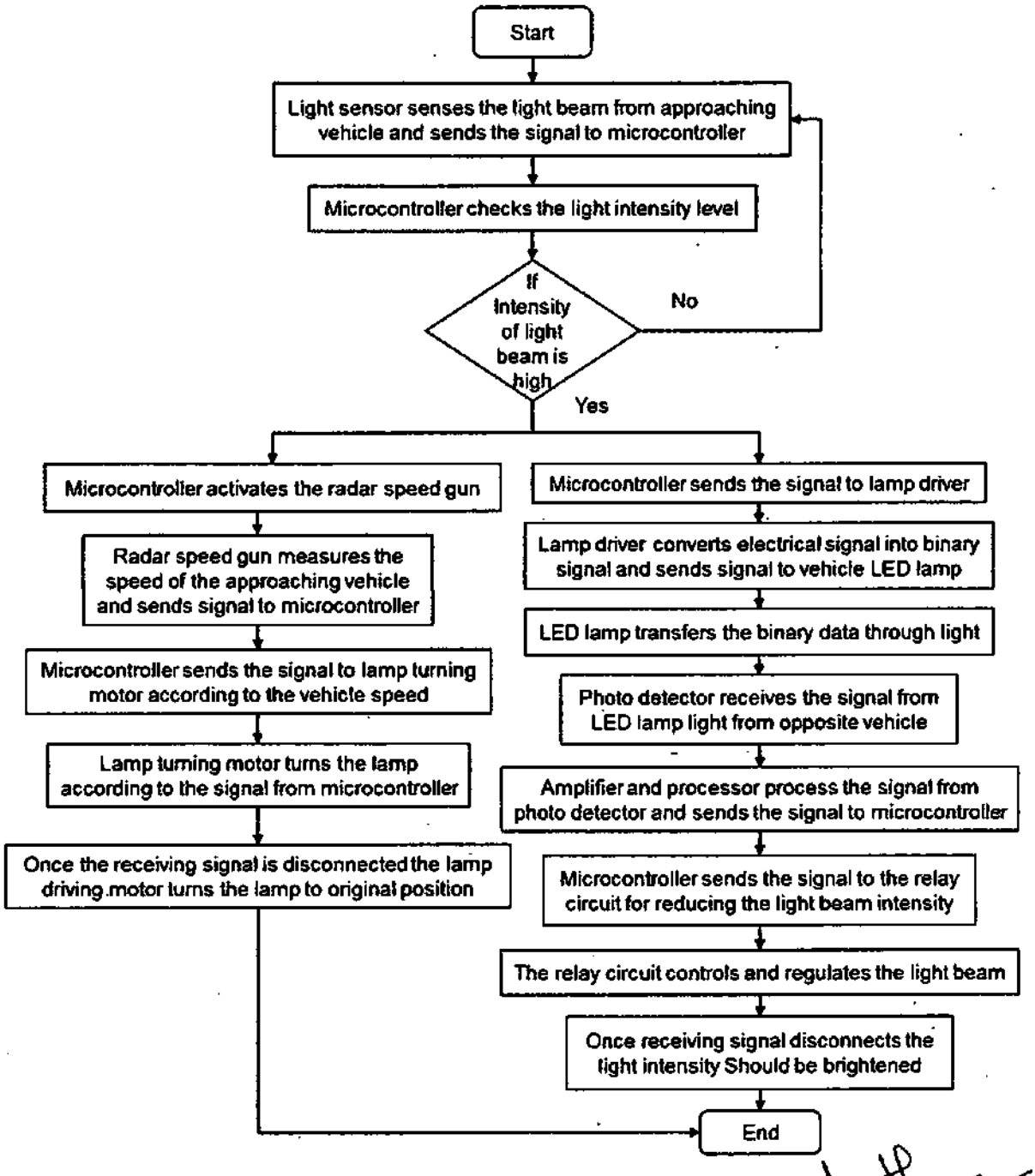


FIG 6

AMIRTHALINGAM JOTHI MURUGAN
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(APPLICANT)

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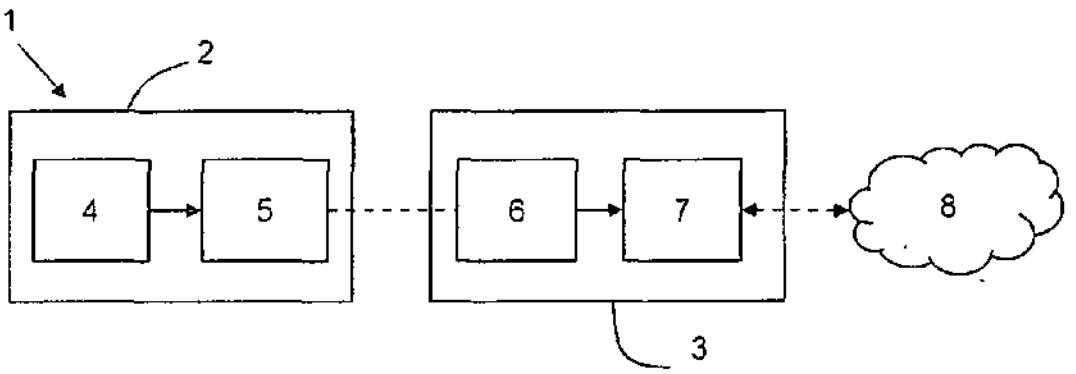


FIG 1

GOPALRAJ MURUGANANTH
POLLACHI - 642001
(APPLICANT)

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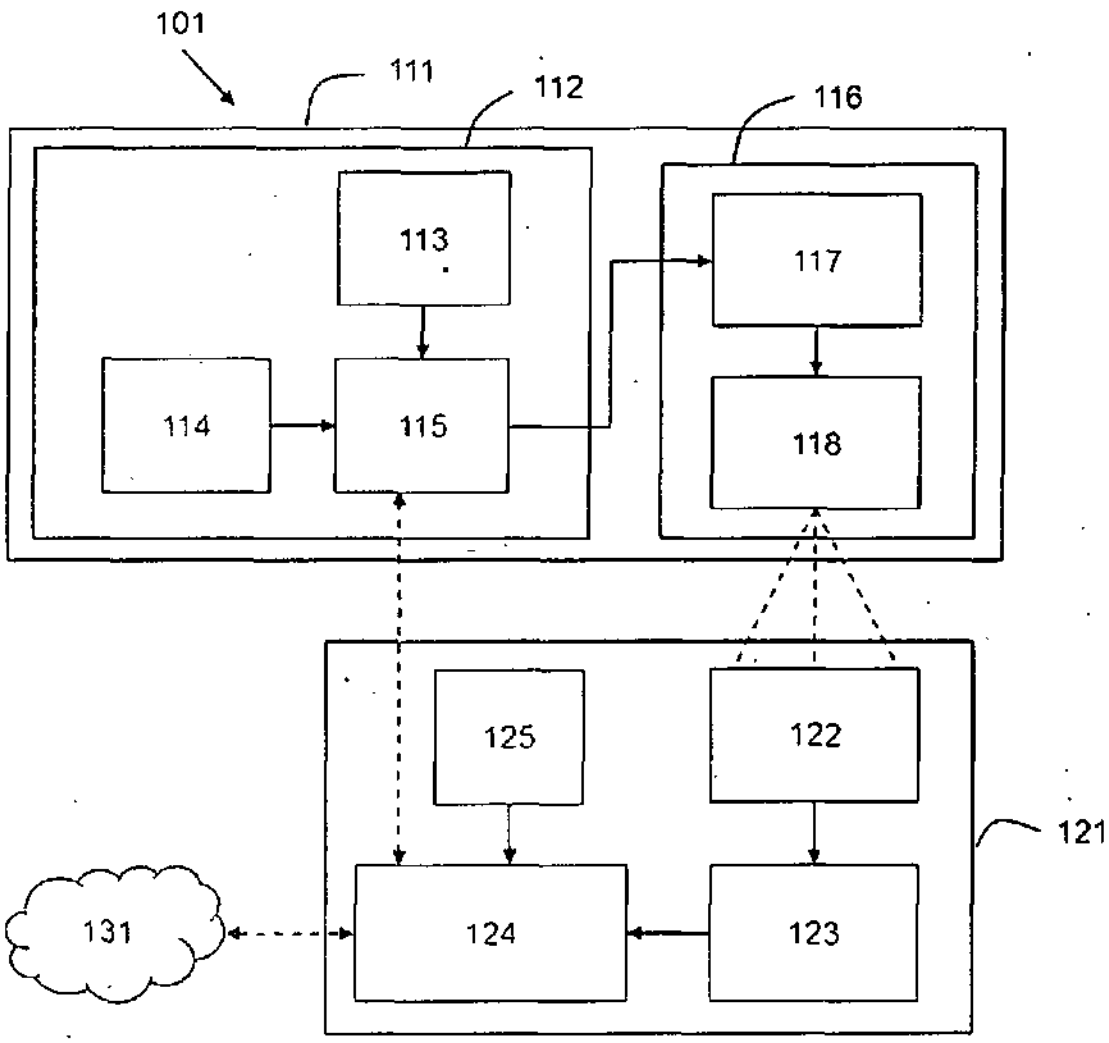


FIG 2

GOPALRAJ MURUGANANTH
POLLACHI - 642001
(APPLICANT)

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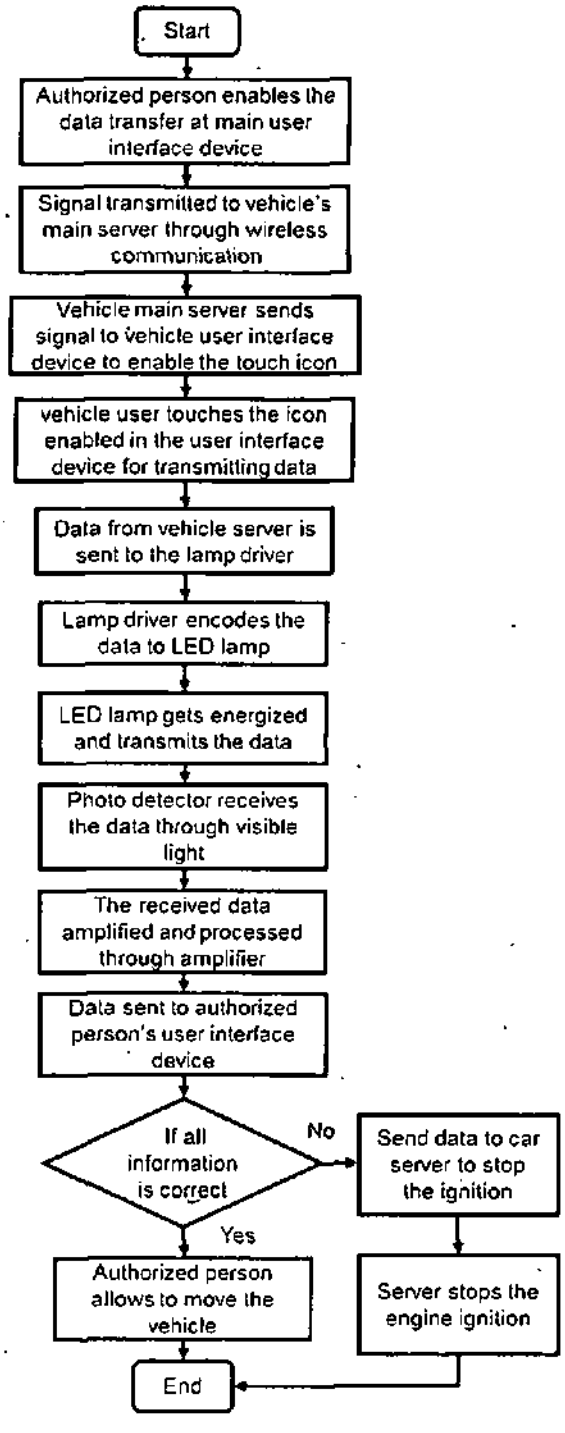


FIG 3

GOPALRAJ MURUGANANTH
POLLACHI - 642001
(APPLICANT)

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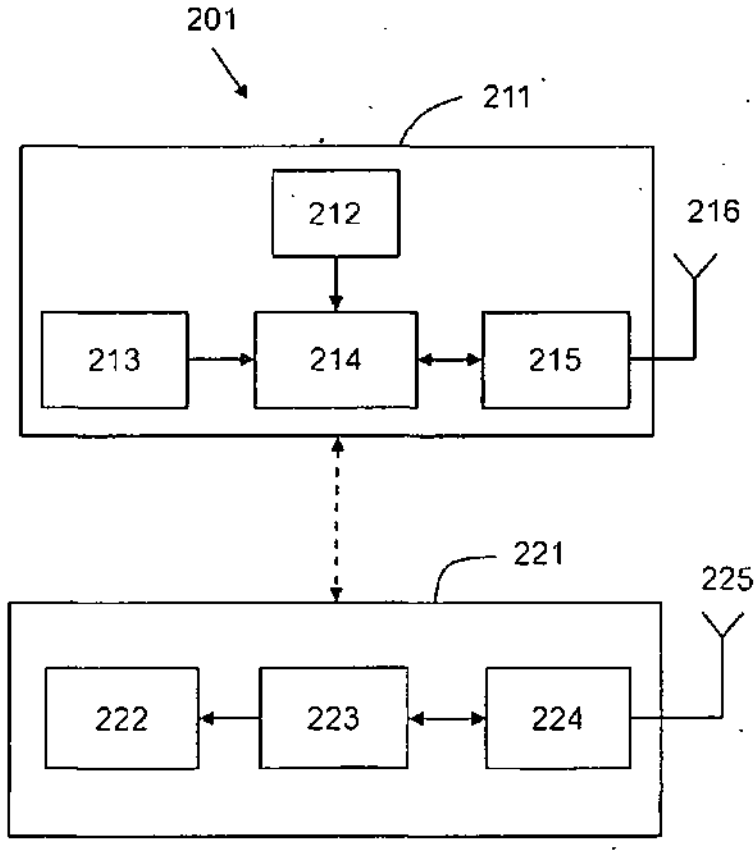


FIG 4

GOPALRAJ MURUGANANTH
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(APPLICANT)

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700183571

FORM 1 THE PATENTS ACT, 1970 (39 of 1970) & The Patents Rules, 2003 APPLICATION FOR GRANT OF PATENT [*See* section 7, 54 & 135 and sub rule 1 of rule 20]	(FOR OFFICE USE ONLY)	
	Application number:	201841012997
	Filing date:	05/04/2018
	Amount of fee paid:	1750/-
	CBR No:	9316
	Signature:	

1. APPLICANT'S REFERENCE / IDENTIFICATION NUMBER (as allotted by office)	

2. TYPE OF APPLICATION (Please click (✓) at the appropriate category)

Ordinary (✓)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of addition ( )	Divisional( )	Patent of addition ( )	Divisional ( )	Patent of addition ( )

3. APPLICANT(S)

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			City	Cheran Maanagar, Coimbatore
			State	Tamilnadu
			Country	India
			Pin code	641035

3B. CATEGORY OF APPLICANT (Please click (✓) at the appropriate category)

Natural person (✓)	Other than Natural person		
	Small entity ( )		Others ( )

4. INVENTOR(S) (Please click (✓) at the appropriate category)

Are all the inventor(s) same as the applicant(s) named above?	Yes ( )	No (✓)

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If "No", furnish the details of the inventor(s)				
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			City	Cheran Maanagar, Coimbatore
			State	Tamilnadu
			Country	India
			Pin code	641035
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			City	Sankari (Tk), Salem (Dt)
			State	Tamilnadu
			Country	India
			Pin code	637103
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			Country	India
			Pin code	636008
GOPALRAJ, Murugananth	INDIAN	INDIA	House No.	23/3
			Street	Hari chandra Street
			City	Pollachi
			State	Tamilnadu
			Country	India
			Pin code	642001

5. TITLE OF THE INVENTION		
HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME		
~~6. AUTHORISED REGISTERED PATENT AGENT(S)~~	~~IN/PA No.~~	
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~~8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTON APPLICATION~~

~~Country~~	~~Application number~~	~~Filing Date~~	~~Name of the invention~~	~~Title of the invention~~	~~IPC (as classified in the convention country)~~

~~9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT COOPERATION TREATY (PCT)~~

~~International application number~~	~~International filing date~~

~~10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION~~

~~Original (first) application No.~~	~~Date of filing original (first) application~~

~~11. IN CASE OF PATENT OF ADDITION, FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT~~

~~Main application/patent No.~~	~~Date of filing of main application~~

12. DECLARATIONS

(I) Declaration by the inventor(s)

We, the above named inventors are the true & first inventor for this invention and declare that the applicant herein is my assignee.

(a) Date: 26.03.2018
(b) Signature:
(c) Name: AMIRTHALINGAM, Jothimurugan

(a) Date: 26.03.2018
(b) Signature:
(c) Name: PERIASAMY, Prakasam

(a) Date: 26.03.2018
(b) Signature:
(c) Name: ABDUL HAMEED, Abdul Zubar

(a) Date: 26.03.2018
(b) Signature:
(c) Name: GOPALRAJ, Murugananth

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~~(ii) Declaration by the applicant(s) in the convention country~~

~~I, the applicant in the convention country declare that the applicant(s) herein is assignee~~

~~(a) Date~~

~~(c) Name(s) of the Signatory :~~

(iii) Declaration by the applicant:

I am , the applicant(s) hereby declare(s) that :

- ☒ I am in possession of the above-mentioned invention
- ☐ The Complete specification relating to the invention is filed with this application.
- ☒ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by us before the grant of patent to me.
- ☐ There is no lawful ground of objection(s) to the grant of the Patent to me.
- ☐ We are the true & first inventors.
- ☐ I am the assignee or legal representative of true & first inventors.
- ☒ The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my invention.
- ☒ I claim the priority from the above mentioned application(s) filed in convention country/ countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which I derive the title.
- ☒ My application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph – 9.
- ☒ The application is divided out of my application particulars of which is given in paragraph-10, and pray that this application may be treated as deemed have been filed on DD/MM/YYYY under Section 16 of the Act.
- ☒ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph – 11.

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13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
~~Provisional/~~ Complete Specification	19	1,750	-
No. of Claim(s)	7 claims and 3 pages	-	-
Abstract	1 page	-	-
No. of Drawing(s)	6 drawings and 6 pages	-	-

(b) Complete specification (2 copies)

~~(c) Sequence listing in Electronic form~~

(d) Drawings (2 copies)

~~(e) Priority documents or a request to retrieve the priority document(s) from DAS~~

~~(f) Translation of priority document/Specification/International search report/International preliminary Report on patentability.~~

(g) Statement and Undertaking on Form 3 (2 copies)

~~(h) Declaration of Inventorship on Form 5 (2 copies)~~

~~(i) Power of Authority~~

(j) Request for Publication on Form 9 (2 copies)

(l) Request for Examination on Form 18 (2 Copies)

Total fee Rs. 8,900 in Demand draft No. 689123 dated 28/03/2018 on State Bank of India.

I hereby declare that to the best of my knowledge, information and belief the fact and matters stated herein are correct and I request that a patent may be granted to me for the said invention.

Dated this 04th day of April 2018.

AMIRTHALINGAM JOTHIMURUGAN
(Applicant)

To,
The Controller of Patents
The Patent Office , at Chennai

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ET523090144IN

Apr 04, 2018

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To
The Controller of Patents,
The Patent Office,
Chennai.

Dear Sir,

Re: New Patent Application as Complete specification
Title: "HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME"
Applicant: AMIRTHALINGAM, Jothimurugan

Please find enclosed a new Complete Patent Application entitled "HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME". I enclose herewith the following documents:

(a) Application in Form – 1 (in duplicate)
(b) Form – 2 with Complete specification (2 copies). No. of pages 19 (excluding drawings)
(c) Drawings (2 copies), No of sheets 06
(d) Statement and Undertaking on Form 3 (in duplicate)
(e) Request for publication on Form 9 (in duplicate)
(f) Request for Examination on Form 18 (in duplicate)

FEES

(g) Fee for excess pages exceeding 30	= NIL
(h) Fee for Application	= Rs. 1,750
(i) Fee for request for publication	= Rs. 2,750
(j) Fee for Examination request	= Rs. 4,400

Fee Rs. 8,900/- vide Demand draft No. 689123 dated 28/03/2018 on Canara Bank.

Please take the application on record and advise us of any further documents/information required for the purpose of this application.

Yours faithfully,

AMIRTHALINGAM JOTHI MURUGAN
(Applicant)
Encl: as above

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05-Apr-2018/26339/201841012997/Other Patent Document

FT52308233BN

700208715

D/11277

Feb 14, 2018

To
The Controller of Patents,
The Patent Office,
Chennai.

Dear Sir,

Re: New Patent Application as Complete specification
Title: "VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF"
Applicant: GOPALRAJ, Murugananth

Please find enclosed a new Complete Patent Application entitled "VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF". I enclose here with the following documents:

(a) Application in Form – 1 (in duplicate)
(b) Form – 2 with complete specification (2 copies). No. of pages 16 (excluding drawings)
(c) Drawings (2 copies), No of sheets 04
(d) Statement and Undertaking on Form 3 (in duplicate)
(e) Request for Earlier publication in Form 9 (in Duplicate)
(f) Request for Examination in Form 18 (in Duplicate)

FEES

(g) Fee for excess pages exceeding 30 = NIL
(h) Fee for Application = Rs. 8,900

Fee Rs. 8,900/- vide Demand draft No. 575649 dated 13/02/2018 on State Bank of India.

Please take the application on record and advise us of any further documents/information required for the purpose of this application.

Yours faithfully,

GOPALRAJ MURUGANANTH
(Applicant)
Encl: as above

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19-Feb-2018/11277/201841006184/Other Patent Document

TECHNICAL FIELD OF THE INVENTION

The present invention generally relates to the field of vehicle lighting system. More particularly, the present invention relates to the field of vehicle headlamp high beam shifting system using light fidelity (LiFi) to avoid accidents while driving a vehicle at night time.

BACKGROUND OF THE INVENTION

During night time when the vehicles are about to cross each other, the driver has an option to select the switch for making light OFF the highly focused headlamp suppressing the intensity of high light on the eyes of the drivers. It helps avoiding accidents during travel in night when the combined brightness due to head lights of both the vehicles crossing each other from the opposite side. This is highly unacceptable and unreliable as it is as much important to switch OFF the dimmer after passing off the vehicles as it is to turn ON the dimmer when the vehicles are about to face each other. While driving at night, headlights are used for visualization of objects approaching the vehicle. When a vehicle approaches from the opposite direction, the driver faces temporary blindness when dazzling light fall on the eyes due to the incident bright source of light. This delays the response by the driver leading to increased incidence of road accidents during night.

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The combined brightness of such lights may cause irritation to the driver who may lose control on the vehicle. Sometimes it happens that the user neglects or forgets to switch ON dimmer light which may result into accident due to light intensity in eyes of the driver of vehicles crossing each other. If the vehicle head lamp is in high beam it may affects the opposite vehicle driver. In some cases, some people are lazy to dim his vehicle headlamp it may results to accidents.

Many systems have been developed to mitigate this problem but the conventional systems are not highly sensitive to the varying intensity of the light. A method of existing disclosure describes a system for switching/regulating the vehicle headlamp beam using radio frequency communication system. Another method of existing disclosure describes that, the vehicle headlamp high beam is reduced by relay driver using light dependent resistor (LDR) sensor. Indian patent application 201621035295 describes a sensor based automatic headlight beam shifter. This system provides a solution to avoid road accidents caused due to 'Troxler effect'. Said an automatic headlight beam shifter system for a vehicle that functions on the output of a light sensor. The system comprises of a LDR sensor connected to a microcontroller through a relay driver, which change the function of the vehicular headlights depending on the intensity of the headlight of the approaching vehicle.

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US patent application US5086253 describes an automatic dimmer apparatus. An apparatus within a vehicle including a plurality of high beams in electrical communication with an automatic circuit to direct voltage to each associated high beam, wherein a phototransistor is arranged in parallel circuitry to a relay coil and resistor, with the junction transistor arranged to interface between the first and the second parallel circuit, including the photo-transistor and adjustable resistor respectively. A modified detector circuit includes a second resistor in series with the resistor, and a third resistor in parallel relationship to the relay coil to effect a time delay in actuation of the high beam members of the vehicle. A third junction transistor is arranged in a third circuit parallel to the first and second circuit to direct current to the respective high beam for increased sensitivity relative to the incoming light source from a remote vehicle.

In general prior art, the vehicle headlamp high beam is reduced by a regulator device for reducing the intensity of a headlamp. But, the major problem arises while regulating the light beam of a headlamp is the signal transmitting time is more for regulating the high beam, while changing the intensity of a light. The present invention is depicted to solve the above problem. The vehicle headlamp intensity is regulated by using visible light communication. This system provides efficient communication for regulating the beam.

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OBJECTIVE OF THE INVENTION

The primary object of the present invention is to provide an automatic headlight beam shifter for vehicles when oncoming and preceding vehicles are detected on the road.

Another object of the present invention is to provide a system for detecting the intensity of light from the headlight of the approaching vehicle.

Another object of the present invention is to provide an in-built radar speed gun for measuring the speed of approaching vehicle.

Yet another object of the present invention is to provide a visible light communication such as Light fidelity (LiFi) based beam shifting system for sending signal faster and regulating the headlamp quickly.

Those and another advancement of the present invention is to provide a system with low reliability, cheaper and faster data transmission rate to the vehicle for ensuring the safety to the driver and the passengers of the vehicle while night driving.

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SUMMARY OF THE INVENTION

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

According to the main aspect of the present invention, the A headlamp beam shifting apparatus for vehicles comprising of at least a light beam sensing device with vehicle speed detection apparatus, signal transmission and light beam shifting arrangement and light signal receiving and processing system and a motorized lamp turning system, wherein the signals are transferred to the opposite vehicle through LiFi based wireless communication system.

According to the another aspect of the present invention, said vehicle headlamp beam shifting apparatus comprises of two major units such as signal transmitting unit and signal receiving unit. The signal transmitting unit comprises of light dependent resistor sensor, radar speed gun, lamp turning motor, inbuilt power backup, microcontroller, lamp driver, and LED lamp. The signal receiving unit comprises of a photo detector, amplifier and processor, microcontroller, inbuilt power supply, relay circuit, vehicle headlamp.

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According to yet another aspect of the present invention, the LiFi based vehicle headlamp control arrangement comprises of light dependent resistor sensor, radar speed gun, LED lamp turning motor, inbuilt power supply, microcontroller, lamp driver, LED lamp, amplifier and processor, photo detector, relay circuit which are connected with a set of vehicle head lamps. The Lamp turning system comprises of a motor, shaft, Lamp fixing holder, LED lamp and lamp mounting cover.

According to the method of working of the present invention, the method of working of headlamp beam shifting apparatus comprising the steps that the light dependent resistor senses the intensity of light beam received from the opposite vehicle and the sensed signal is sent to the microcontroller for processing. Microcontroller checks the light intensity level and compares the value from the standard parameters. If the sensor received the High beam of light, the controller sends the signal to lamp driver for reducing the light beam of opposite vehicle and the lamp driver converts electrical signal into binary signal and it is sent to the vehicle head lamp and the vehicle head lamp transfer the signal to the opposite vehicle through light. The Photo detector in the opposite vehicle receives the light signal and it is transferred to amplifier and processor to process the signal from photo detector and sends the signal to the vehicle microcontroller. The Microcontroller sends the signal to relay circuit for reducing the light beam

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intensity and the relay circuit controls and regulates the light beam intensity according to the information from microcontroller.

Microcontroller also activates the radar speed gun to measure the speed of the vehicle and the microcontroller process the signal from radar speed gun and sends the signal to lamp turning motor according to vehicle speed; the Lamp turning motor turns the lamp based on the information from microcontroller. Once the receiving signal is disconnected, the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position.

These and other advantages of the present invention will become readily apparent from the following detailed description read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 depicts the schematic view of problem faced by the driver while driving vehicle at night time (1) in accordance with the present invention

Figure 2 depicts the schematic view of light fidelity (LiFi) based vehicle headlamp beam shifting system in a vehicle in accordance with the embodiment of present invention.

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Figure 3 depicts the block diagram of control unit of vehicle head lamp beam shifter in accordance with the present invention.

Figure 4 describes the block diagram of vehicle headlamp beam shifter using light fidelity (LiFi) in accordance with the present invention.

Figure 5 depicts the schematic view of motorized lamp turning system for sending data through visible light in accordance with the present invention.

Figure 6 illustrates the flow chart of method of working of LiFi based vehicle headlamp beam shifter in accordance with the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

Features that are described and/or illustrated with respect to one embodiment may be used in the same way or in a similar way in one or more other

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embodiments and/or in combination with or instead of the features of the other embodiments.

Figure 1 depicts the schematic view (1) of problem faced by the driver while driving vehicle at night time in accordance with the present invention. The existing system describes the driver, while driving a vehicle (2) at night time, the vehicle approaches by another opposite vehicle (3). The approaching vehicle (3) may have a high beam of light which may affect the vision of driver especially at night time. The light beam causes temporary blindness to the human eyes and it may lead to accidents.

Figure 2 depicts the schematic view (11) of Li-Fi based headlamp beam shifting system in a vehicle in accordance with the embodiment of present invention. The headlamp beam shifting system (11) according to the present invention comprises of a light beam sensing with vehicle speed detection apparatus (21), signal transmission and light beam shifting arrangement (61) and light signal receiving and processing system (51). Light beam sensing and vehicle speed detection apparatus (21) is utilized to detect the vehicle speed and light beam from approaching vehicle. Signal transmission and light beam shifting arrangement (61) is utilized to transfer the light signals to the approaching vehicle. Light signal receiving and processing system (51) is utilized to receive the visible light signal

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from approaching vehicle based on the signal from approaching vehicle the intensity of light beam is regulated.

Figure 3 depicts the block diagram of LiFi based vehicle headlamp control arrangement (51) in accordance with the present invention. LiFi based vehicle headlamp control arrangement (51) comprises of light dependent resistor sensor (24), radar speed gun (25), LED lamp turning motor (26), inbuilt power supply (27), microcontroller (28), lamp driver (29), LED lamp (30), amplifier and processor (31), photo detector (32), relay circuit (33) and a set of vehicle head lamp (34). Microcontroller (28) is connected with light dependent resistor sensor (24) for measuring the approaching vehicle light intensity. Radar speed gun (25) is connected to the control unit (28) for measuring the approaching vehicle speed. Lamp turning motor (26) is connected to the controller (28) for turning the LED lamp according to the approaching vehicle movement. The inbuilt power supply (27) is connected with the microcontroller (28) for providing electric power to the circuit. Lamp driver (29) is connected to the microcontroller (28) for sending the data to opposite vehicle. LED lamp (30) is connected to the lamp driver (29) for providing light and send data to opposite vehicle. Relay circuit (33) is connected to the vehicle headlamp (34) for regulating the light beam intensity. Photo detector (32) is connected to the amplifier and processor (31) for receiving the light signal from opposite vehicle. The amplifier and processor (31) is connected to the microcontroller (28) for processing the signal and transferred to the control unit.

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Figure 4 depicts the block diagram of vehicle headlamp beam shifter using Light fidelity (LiFi) (21) in accordance with the present invention. Vehicle headlamp beam shifting system comprises of two major units such as signal transmitting unit (22) and signal receiving unit (23). The signal transmitting unit (22) comprises of light dependent resistor sensor (24), radar speed gun (25), lamp turning motor (26), inbuilt power backup (27), microcontroller (28), lamp driver (29), and LED lamp (30). Light dependent resistor sensor (24) is connected to the microcontroller (28) for sensing light beam and transmitting the signals. The radar speed gun (25) measures the approaching vehicle speed and send signal to microcontroller (28). Lamp turning motor (26) is connected to the microcontroller (28) according to the signals from microcontroller, LED lamp turns (30) towards vehicle direction. Inbuilt power backup (27) in a vehicle is connected to the microcontroller (28) for providing power supply. Microcontroller (28) is connected to the lamp driver (29) for sending the signal. The lamp driver (29) is connected to the LED lamp (30). The electrical signal from microcontroller (28) is converted into binary data and it is sent to the vehicle LED lamp (30) through lamp driver (29).

The signal receiving unit (23) comprise of a photo detector (41), amplifier and processor (42), microcontroller (43), inbuilt power supply (44), relay circuit (45), vehicle headlamp (46). Photo detector (41) is connected to the amplifier and processor (42) for processing the visible light signal from vehicle LED lamp (30).

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The binary data from photo detector (41) is converted into electrical signal. Said amplifier and processor (42) is connected to the microcontroller (43). The microcontroller (43) is connected to the relay circuit (45) for regulating the light beam of the vehicle head lamp (46). The vehicle head lamp (46) is connected to the relay circuit (45). Inbuilt power supply (44) is connected to the microcontroller (43).

Figure 5 depicts the schematic view of motorized lamp turning system (61) for sending data through visible light in accordance with the present invention. Lamp turning system comprises of motor (26), shaft (62), Lamp fixing holder (63), LED lamp (30) and lamp mounting cover (64). The motor (26) is mounted near to the vehicle front head lamp. The motor shaft (62) is connected to the lamp fixing holder (63). The LED lamp (30) is mounted inside the lamp mounting cover (64). When the signal coming from microcontroller the lamp turning motor (26) turns the LED lamp (30).

Figure 6 illustrates the flow chart of working method of LiFi based head lamp control system in accordance with the present invention. When a vehicle is driven at night time, usually many vehicles crossing in opposite direction. In the present invention, the light dependent resistor is mounted in the vehicle for sensing the light beam from opposite vehicle. It senses the intensity of light beam received from the opposite vehicle and the sensed signal is sent to the microcontroller for

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processing. Microcontroller checks the light intensity level and compares the value from the standard parameters. If the intensity of light beam is within the accepted limit; the sensor continuously checks the approaching vehicle intensity.

If the sensor received the High beam of light, the controller sends the signal to lamp driver for reducing the light beam of opposite vehicle. The lamp driver converts electrical signal into binary signal and it is sent to the vehicle head lamp. Vehicle head lamp transfer the signal through light. Photo detector receives the light signal from opposite vehicle and it is transferred to amplifier and processor. The amplifier and processor process the signal from photo detector and sends the signal to the vehicle microcontroller. Microcontroller sends the signal to relay circuit for reducing the light beam intensity. The relay circuit controls and regulates the light beam intensity according to the information from microcontroller. Once the receiving signal is disconnected the light beam intensity is set as an original position.

During the light beam sensing time, microcontroller also activates the radar speed gun to measure the speed of the vehicle. The radar speed gun measures the speed of the approaching vehicle and send the data to the microcontroller. The microcontroller process the signal from radar speed gun and sends the signal to lamp turning motor according to vehicle speed. Lamp turning motor turns the lamp based on the information from microcontroller. Once the receiving signal is

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disconnected, the microcontroller sends the signal to lamp turning motor and the motor turns the lamp to its original position. The process is completed when receiving signal is disconnected from light dependent resistor (LDR) sensor.

In view of the present disclosure which describes preferred and best modes for providing an apparatus for mounting and dismounting the luminescent devices. Modifications and variations would present themselves to those skilled in the art without departing from the scope and spirit of this invention. Any modifications and variations coming within the meaning and range of equivalency are considered within the scope.

Dated 04th day of April 2018.

AMIRTHALINGAM JOTHI MURUGAN
COIMBATORE – 641035
(APPLICANT)

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FIELD OF THE INVENTION

The present invention generally relates to the field of vehicle identification system using wireless communication device. More particularly, the present invention relates to the field of data transmission through visible light communication system to ensure secured data transfer.

BACKGROUND OF THE INVENTION

With the widespread use of transport vehicle in India, vehicle owners or traffic police or regional transport authority need to collect and learn a lot of drivers and vehicle data base such as vehicle registration certificate, engine number, license plate number, driver information, vehicle insurance information, pollution under control certificate, etc.

With the rapid development of automobile industry, the total number of vehicles in the country is constantly expanding, with more and more fake documents, smuggled vehicles and scrapped vehicles coming along, as well as forged or altered vehicle driving documents to evade motor vehicles Annual inspection of drivers' licenses and other acts and incidents often occur. At present, the documents are maintained in the form of hard copies. The authorized personnel checks all the document by manually. It leads to some problems like manual error, data loss, malfunctions and storage of documents for a long period. Nowadays, collection of vehicle and driver's documents by police department and transport departments needs much effort and time.

To solve the above depicted problem diverse methods and various measures have taken. For example, an RFID based vehicle data collection system is disclosed in the existing art. It consists of an RFID tag, RFID reader and user interface device. RFID data storage medium is mounted on a vehicle. The storage medium has unique ID. It is only accessed by authorized persons like traffic police and regional transport authority, law enforcement officials, etc. Authorized person

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has an RFID readable user interface device. It reads the radio frequency signal emitted from RFID tag mounted on a vehicle. The authorized person collects the vehicle data base and driver database such as registration certificate, insurance, vehicle owner information and pollution under control certificate, etc.

Another method of disclosure describes the smart card based vehicular data base collection system. The vehicle driver has a smart card or RFID tag. The vehicle information's are encoded in a tag. The smart card contains vehicle information's like registration certificate, insurance and pollution under control certificate, etc. Law-enforcement officials have a swiping device for getting the vehicular data. Here the major drawback of this system is the radio frequency identification tag signal is accessible by another RFID reader. So, there are chances that for anyone can collect the data and chances for misusing it and therefore this method is not suitable for secured data transmission.

Indian patent application 201621042426 is describes an intelligent vehicle data base management and access system. It focusses on centralization of vehicle database and automate the existing pollution under control certificate issuing, renewing and checking process. Radio frequency identification tags are used as a smart card with unique identification code for accessing the vehicular data through internet and fill the petrol in a fuel station using PUC smart card. Here the smart card is used to fill the fuel in a vehicle at fuel station. It is not convenient to keep the smart card at all time when filling the fuel. If the card is broken or the card or lost, the user neither be able fill the fuel nor to get the vehicle information.

US patent application 2006292984 is describes an RFID vehicle tracking system using mobile transceivers and stationary responders. Vehicle tracking system using radio frequency identification transponders and RFID transceiver, which is attached to a moving vehicle to collect vehicle location data. Whenever the vehicle comes near by the transceiver, the transponder sends the location and vehicle

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information through internet using mobile communication. The major drawback of the above depicted system is that, the radio frequency signals from RFID tag is readable by another RFID reader and therefore it is not suitable for secured data transmission.

Most of the existing disclosure describes the methods of transmitting data through radio frequency identification (RFID) system. The data from vehicle is transferred only through RFID transponder which is disadvantageous. The data may accessible by another RFID reader. It leads to lose the vehicle information and it is not suitable for secured data transfer. Another method of data transfer is smart card based vehicle information sharing system. When the card is lost by driver or it broken or it leads to misuse by some other person.

The present invention is depicted to solve the problem faced by existing disclosure. The vehicle information transmission system by radio frequency identification system (RFID) is replaced by visible light communication for ensuring secured data transmission.

OBJECTIVE OF THE INVENTION

The primary object of the present invention is to overcome and solve the above problem of transmitting data from vehicle to law-enforcement officials in the existing art.

Another object of the present invention is to provide wireless communication device for transmitting vehicular information to authorized person through wireless communication module such as ZigBee.

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Still another object of the present invention is to provide an improved method of vehicle data transmission system using visible light communication technology such as light fidelity (Li-Fi) for secured data transmission.

Yet another object of the present invention is to digitalize the vehicular information checking process to reduce the vehicle information checking time at check post.

The present invention is aimed to eliminate the usage of hard copies of vehicle information such as registration certificate, insurance, vehicle information and pollution under control certificate and thereby eliminating the need of hard copies of documents which is difficult to maintain for long period.

Those and another advancement of the present invention is to check the all other documents about the vehicle are verified at a time, the vehicle theft can be detected easily and to identify the fake documents easily. Also it supports to find the expiry dates of all documents such as pollution certificate and vehicle insurance.

SUMMARY OF THE INVENTION

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

According to the main aspect of the present invention, a vehicle identification device with wireless communication system comprises a visible light communication unit, data receiving & processing means and cloud storage. Said vehicle controlling means sends the vehicle information to data transmitting

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means and the data transmitting means sends the vehicle information to data receiving & processing means through visible light. Said visible light communication unit comprises of at least a vehicle controlling means and a data transmitting means and the data receiving and processing means is connected to the cloud server via user interface device through internet. The vehicle controlling means comprises of an inbuilt power backup, microcontroller and user interface touch screen display.

According to another aspect of the present invention, the Data receiving and processing means comprises of photo detector, data amplification and processing means, user interface device and an inbuilt power supply. Said user interface device is wirelessly connected to the cloud storage through internet.

According to the method of working of Vehicle identification device with wireless communication system comprises the method such as, the data transfer enquiry mode is enabled at main user interface device by the authorized person and the signal from said user interface device is transmitted to vehicle's main server through wireless communication. The vehicle main server receives the radio frequency signal from the User Interface of authorized person and the signal is processed by vehicle microcontroller. The signal from vehicle microcontroller is transmitted to vehicle user interface device and enables the touch icon in the touch screen display to send the vehicular information. When the user touches the icon enabled in the screen for transmitting data from vehicle to authorized person, the microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted into binary data in the lamp driver and encodes binary data to LED lamp wherein said LED lamp transmits the binary data information to the Receiver User interface through visible light such as photons. The receiving module has a photo detector for receiving the visible light signals from LED lamp and the received data is amplified and processed by amplifier and microcontroller and sent to the authorized person's user interface device.

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According to another aspect of the present invention, the wireless vehicle information transmission system comprises of two major parts such as vehicle data transmitting means and vehicle data receiving means. The Transmitting means sends the vehicle information to the receiving means through wireless communication module such as ZigBee. Said transmitting means on a vehicle comprises of inbuilt power backup, microcontroller, LCD display, ZigBee module and a transceiver. Said vehicle information receiving means comprises of a LCD display, microcontroller, ZigBee and a transceiver.

These and other advantages of the present invention will become readily apparent from the following detailed description read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other aspects, features, and advantages of certain exemplary embodiment of the present invention will be more apparent from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 depicts the block diagram of Radio Frequency Identification (RFID) system based vehicle information transmission system in the existing art.

Figure 2 depicts the block diagram of visible light communication such as light fidelity (Li-Fi) based vehicle information transmission system in accordance with the embodiment of present invention.

Figure 3 illustrates the flowchart of light fidelity based vehicle information transmission system in accordance with the present invention.

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Figure 4 depicts the block diagram of wireless vehicle information transmission system using ZigBee protocol in accordance with another embodiment of the present invention.

Persons skilled in the art will appreciate that elements in the figures are illustrated for simplicity and clarity and may have not been drawn to scale. For example, the dimensions of some of the elements in the figure may be exaggerated relative to other elements to help to improve understanding of various exemplary embodiments of the present disclosure. Throughout the drawings, it should be noted that like reference numbers are used to depict the same or similar elements, features, and structures.

DETAILED DESCRIPTION OF THE INVENTION

The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

Features that are described and/or illustrated with respect to one embodiment may be used in the same way or in a similar way in one or more other embodiments and/or in combination with or instead of the features of the other embodiments.

Figure 1 depicts the block diagram of Radio Frequency Identification system based vehicle information transmission system (1) present in the existing art. This system comprises of three segments such as transmitting means (2), receiving means (3) and cloud storage (8). Transmitting means (2) is called as vehicle data transmitting module such as RFID tag and receiving means (3) called as

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authorized person's data receiving module. Transmitting means (2) comprises of vehicle server such as microcontroller (4) and RFID tag (5) are mounted in the vehicle. Receiving means (3) comprises of RFID reader (6) and user interface device (7). The microcontroller (4) is connected to the RFID tag (5) and the vehicle information is encoded in a RFID tag. Law enforcement officer have a receiving module such as RFID reader (6). The reader (6) reads the wireless signals from RFID tag and sends the signal to user interface device. User interface device is connected to the cloud server (8). The authorized person can verify the data from vehicle server through RFID reader and vehicle information stored in the cloud sever (8) through internet.

Figure 2 depicts the block diagram of visible light communication system such as light fidelity (Li-Fi) based vehicle identification device (101) in accordance with the preferred embodiment of present invention. Said vehicle identification device (101) is mounted with visible light communication unit (111), data receiving & processing means (121) and cloud storage (131). The visible light communication unit (111) comprises of at least a vehicle controlling means (112) and a data transmitting means (116). Said vehicle controlling means (112) sends the vehicle information to data transmitting means (116) through wire. The data transmitting means (116) sends the vehicle information to data receiving & processing means (121) through visible light. The data receiving and processing means (121) is connected to the cloud server (131) via user interface device through internet for verifying the data collected from user.

Vehicle controlling means (112) comprises of an inbuilt power backup (114), microcontroller (115) and user interface touch screen display (113). The electric power from inbuilt power backup (114) is sent to the microcontroller (115). The microcontroller is connected to the user interface device (113). The vehicle information such as registration certificate, insurance and pollution certificate are stored in the microcontroller (115). The user interface for example a touch screen

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display (113) is used to enable a touch icon when the authorized person send the signal. Microcontroller (115) is connected to the lamp driver (117) for transmitting vehicle information to authorized person. Said lamp driver (117) is connected to the LED lamp (118). Here electrical signal is converted into visible light signal such as photons. When the user touches the icon the data is encoded into the light driver and transmitted through LED lamp.

Further with reference to Figure 2, the Data receiving and processing means (121) comprises of photo detector (122), data amplification and processing means (123), user interface device (124) and inbuilt power supply (125). Photo detector (122) is used to receive the photons from LED lamp (118) and convert it as an electrical signal. Said photo detector (122) is connected to the data amplification and processing unit (123). This unit is used to amplify the signals from LED lamp (118) at faster rate. The amplification unit is connected to user interface device for visualize the vehicle information document. Inbuilt power backup (125) is connected to the user interface device (124). The user interface device (124) is wirelessly connected to the cloud storage (131) through internet.

Figure 3 illustrates the flowchart which describes the method of working of light fidelity based vehicle information transmission system in accordance with the present invention. The authorized person who see the vehicle in a vehicle checking area enables the data transfer enquiry mode at main user interface device. Signal from user interface device is transmitted to vehicle main server (Not shown) through wireless communication. Vehicle main server receives the radio frequency signal from authorized person that signal is processed by vehicle microcontroller. The signal from vehicle microcontroller is transmitted to vehicle user interface device touch screen display. It enables the touch icon to send the vehicular information. The user touches the icon enabled in the screen for transmitting data from vehicle to authorized person. The microcontroller sends the vehicle data to lamp driver. The electrical signal from controller is converted

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19-Feb-2018/11277/201841006184/Form 2(Title Page)

into binary data in a lamp driver. The driver encodes binary data to LED lamp. Said the LED lamp gets energized and starts glowing, the binary data information is transmitted through visible light such as photons.

Receiving module has a photo detector for receiving the visible light signals from LED lamp. The received data is amplified and processed by amplifier and microcontroller. Those received data is sent to the authorized person's user interface device. The authorized person's user interface device is connected to the cloud storage. The person checks the vehicle's information transferred to the device. If all information are correct, he shall allow the vehicle to move. If the data are not correct, he shall send a communication to the vehicle microcontroller and initiate a command to stop the ignition. Once the microcontroller receives the signal, it stops the engine ignition power supply and engine goes to OFF mode. The authorized person may take necessary action according to the requirement and situation. In this method, the data are transferred in more secured form which protects the data theft. Also, the fake document, expiry data of vehicle document, expired pollution certificate and theft vehicles shall be identified easily.

Figure 4 depicts the block diagram of wireless vehicle information transmission system using Zigbee (201) in accordance with another embodiment of present invention. This system comprises of two major parts vehicle data transmitting means (211) and vehicle data receiving means (221). Transmitting means (211) sends the vehicle information to the receiving means (221) through wireless communication module such as Zigbee. The transmitting means (211) on a vehicle comprises of inbuilt power backup (213), microcontroller (214), LCD display (212), Zigbee module (215) and transceiver (216). The power backup (213) is connected to the microcontroller (214). The vehicle information's are stored in a microcontroller and it is displayed in a LCD display (212) mounted in a vehicle. The wireless Zigbee module (215) is connected to the microcontroller (214) for transmitting the vehicle information to law enforcement officer's user

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interface device. The transmitting means connected to the ZigBee module for transmitting data from electrical signals to radio frequency signal.

Vehicle information receiving means (221) comprises of LCD display (222), microcontroller (223), ZigBee (224) and transceiver (225). The microcontroller (223) is connected with LCD display (222) and wireless data transmitting module ZigBee (224). The transceiver (225) receives the radio frequency signal from vehicle data transmitting means and sends the signal to the microcontroller. Microcontroller shows the vehicle information in a digital display.

In view of the present disclosure which describes preferred and best modes for providing Vehicle identification device with wireless communication system, modifications and variations would present themselves to those skilled in the art without departing from the scope and spirit of this invention. Any modifications and variations coming within the meaning and range of equivalency are considered within the scope.

Dated this 14th day of February 2018.

GOPALRAJ MURUGANANTH
POLLACHI – 642 001
(APPLICANT)

PATENT OFFICE CHENNAI 19/02/2018 15:21

19-Feb-2018/11277/201841006184/Form 2(Title Page)

700183572

FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

The Patents Rules, 2003

COMPLETE SPECIFICATION

(See section 10; rule 13)

1. Title of the invention : HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME

2. Applicant(s)

(a) NAME : AMIRTHALINGAM, Jothimurugan

(b) NATIONALITY : Indian

(c) ADDRESS : 2/245 B, II Street,
Teachers Colony,
VK Road,
Cheran Maanagar,
Coimbatore.
India – 636008.

3. PREAMBLE TO THE DESCRIPTION

The following specification particularly describes the invention and the manner in which it is to be performed.

05-Apr-2018/26339/201841012997/Form 2(Title Page)

PATENT OFFICE CHENNAI 06/04/2018 11:45

700183573

FORM 3
THE PATENT ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003

STATEMENT AND UNDERTAKING UNDER SECTION 8
(See Section 8; rule 12)

I, AMIRTHALINGAM, Jothimurugan, an Indian Citizen of No. 2/245 B, II Street, Teachers Colony, VK Road, Cheran Maanagar, Coimbatore, Tamilnadu, India – 641035..... Hereby declare:

(i) that we have not made any application for the same / substantially the same invention outside India .

~~Or~~

(ii) ~~that I/We who have made this application No..... Dated .....alone /jointly with.....made for the same/substantially same invention, application(s) for patent in the other countries, the particulars of which are given below:~~

Name of the Country	Date of Application	Application. No.	Status of the Application	Date of Publication	Date of Grant
		NONE			

(iii) that the rights in the application has/have been assigned to : **NONE**

(iv) that we undertake that up to date of the grant of the patent by the Controller, we would keep him informed in writing the details regarding corresponding applications for patents filed out side India within six months from the date of filing of such application.

Dated this 04th day of April 2018.

AMIRTHALINGAM JOTHIMURUGAN
(Applicant)

To,
The Controller of Patents,
The Patent Office, at Chennai.

PATENT OFFICE CHENNAI 06/04/2018 11:45

05-Apr-2018/26339/201841012997/Form 3

700183574

CBR: 93/6
DATE: 05/04/2018
Amt: 2750/-
5/4/18

FORM 9

THE PATENTS ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
REQUEST FOR PUBLICATION
(See section 11A(2); rule 24A)

I, AMIRTHALINGAM, Jothimurugan, an Indian Citizen of No. 2/245 B, II Street, Teachers Colony, VK Road, Cheran Maanagar, Coimbatore, Tamilnadu, India – 641035..... Hereby request for Early publication of my Application for Patent as Complete specification under Section 11A(2) of the Act.

Dated this 04th day of April 2018.

AMIRTHALINGAM JOTHIMURUGAN
(Applicant)

05-Apr-2018/26339/201841012997/Form 9

PATENT OFFICE CHENNAI 06/04/2018 11:45

700183575

FORM 18
THE PATENTS ACT, 1970
(39 OF 1970)
AND
THE PATENTS RULES, 2003

REQUEST FOR EXAMINATION OF APPLICATION FOR PATENT
[See section 11-B and rules 20(4)(ii), 24B(1)(i)]

(FOR OFFICE USE ONLY)
RQ. No: R201840104 19
Filing Date: 05/04/2018
Amount of Fee Paid: 44001-
CBR No: 9316
Signature:

5/4/18

1. **APPLICANT**
(a) NAME : AMIRTHALINGAM, Jothimurugan
(b) NATIONALITY : Indian
(c) ADDRESS : 2/245 B, II Street,
Teachers Colony,
VK Road,
Cheran Maanagar,
Coimbatore,
Tamilnadu, India – 641035
(d) DATE OF PUBLICATION: (Earlier publication requested).

2. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY THE APPLICANT(S)

We hereby request that our application dated 04.04.2018 for the invention titled "HEADLAMP BEAM SHIFTING APPARATUS AND A METHOD TO OPERATE THE SAME" shall be examined under sections 12 and 13 of the Act.

~~Or~~

~~I/We hereby make an express request that my/our application for patent no. filed on based on Patent Cooperation Treaty (PCT) application no. dated made in country shall be examined under sections 12 and 13 of the Act, immediately without waiting for the expiry of 31 months as specifed in rule 20(4)(ii).~~

~~3. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY ANY OTHER INTERESTED PERSON~~
~~I/We the interested person request for the examination of the application no. dated filed by the applicant titled under sections 12 and 13 of the Act.~~
~~As an evidence of my/our interest in the application for patent following documents are submitted. (a)~~

4. ADDRESS FOR SERVICE :
2/245 B, II Street,
Teachers Colony,
VK Road,
Cheran Maanagar,
Coimbatore,
Tamilnadu, India – 641035
E: jothimurugan196@gmail.com
M: (0) 8754298855

Dated this 04th day of April 2018.

AMIRTHALINGAM JOTHIMURUGAN
(Applicant)

To,
The Controller of Patents
The Patent Office, at Chennai

PATENT OFFICE CHENNAI 06/04/2018 11:45

05-Apr-2018/26339/201841012997/Form 18

700208718

FORM 1 THE PATENTS ACT, 1970 (39 of 1970) & The Patents Rules, 2003 APPLICATION FOR GRANT OF PATENT [*See* section 7, 54 & 135 and sub rule 1 of rule 20]	(FOR OFFICE USE ONLY)	
	Application number:	201841006184
	Filing date:	19/02/2018
	Amount of fee paid:	1750/-
	CBR No:	4578
	Signature:	19/2/18

1. APPLICANT'S REFERENCE / IDENTIFICATION NUMBER (as allotted by office)	

2. TYPE OF APPLICATION (Please click (✓) at the appropriate category)

Ordinary (✓)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of addition ( )	Divisional( )	Patent of addition ( )	Divisional ( )	Patent of addition ( )

3. APPLICANT(S)

Name in full	Nationality	Country of Residence	Address of the Applicant	
GOPALRAJ, Murugananth	INDIAN	INDIA	House No.	23/3
			Street	Hari chandra Street
			City	Pollachi
			State	Tamilnadu
			Country	India
			Pin code	642001

3B. CATEGORY OF APPLICANT (Please click (✓) at the appropriate category)

Natural person (✓)	Other than Natural person		
	Small entity ( )		Others ( )

4. INVENTOR(S) (Please click (✓) at the appropriate category)

Are all the inventor(s) same as the applicant(s) named above?	Yes (✓)	No ( )

19-Feb-2018/11277/201841006184/Form 1

PATENT OFFICE CHENNAI 19/02/2018 15:21

~~If "No", furnish the details of the inventor(s)~~				
~~Name in Full~~	~~Nationality~~	~~Country of Residence~~	~~Address of the Inventor~~	
			~~House No.~~	
			~~Street~~	
			~~City~~	
			~~State~~	
			~~Country~~	
			~~Pin code~~	

5. TITLE OF THE INVENTION

VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF

~~6. AUTHORISED REGISTERED PATENT AGENT(S)~~	~~IN/PA No.~~	
	~~Name~~	
	~~Mobile No.~~	
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	Dr. G. MURUGANANTH
	Postal Address	23/3, Hari chandra Street, Pollachi, Tamilnadu, India. - 642001.
	Telephone No.	-
	Mobile No.	(0) 9942116780
	Fax No.	-
	Email ID	gmurugananth@gmail.com

~~10. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTON APPLICATION~~

~~Country~~	~~Application number~~	~~Filing Date~~	~~Name of the invention~~	~~Title of the Invention~~	~~IPC (as classified in the convention country)~~

~~9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT COOPERATION TREATY (PCT)~~

~~International application number~~	~~International filing date~~

~~10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION~~

19-Feb-2018/11277/201841006184/Form 1

PATENT OFFICE CHENNAI 19/02/2018 15:21

~~Original (first) application No.~~	~~Date of filing original (first) application~~

~~11. IN CASE OF PATENT OF ADDITION, FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT~~

~~Main application/patent No.~~	~~Date of filing of main application~~

12. DECLARATIONS

(I) Declaration by the inventor(s)

I, the above named inventor is the true & first inventor for this invention and declare that the applicant herein is my assignee.

(a) Date: 14.02.2018

(b) Signature:

(c) Name: GOPALRAJ, Murugananth

~~(ii) Declaration by the applicant(s) in the convention country~~

~~I, the applicant in the convention country declare that the applicant(s) herein is assignee~~

~~(a) Date~~

~~(b) Signature(s)~~

~~(c) Name(s) of the Signatory :~~

(iii) Declaration by the applicant:

I am , the applicant(s) hereby declare(s) that :

- ☒ I am in possession of the above-mentioned invention
- ☐ The Complete specification relating to the invention is filed with this application.
- ☒ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by us before the grant of patent to me.
- ☐ There is no lawful ground of objection(s) to the grant of the Patent to me.
- ☐ I am the true & first inventor.
- ☐ I am the assignee or legal representative of true & first inventor.
- ☒ The application or each of the applications, particulars of which are given in Paragraph-8, was the first

PATENT OFFICE CHENNAI 19/02/2018 15:21

19-Feb-2018/11277/201841006184/Form 1

application in convention country/countries in respect of my invention.

☒ I claim the priority from the above mentioned application(s) filed in convention country/ countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which I derive the title.

☒ My application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph – 9.

☒ The application is divided out of my application particulars of which is given in paragraph-10, and pray that this application may be treated as deemed have been filed on DD/MM/YYYY under Section 16 of the Act.

☒ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph – 11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete Specification	12 pages	1,750	-
No. of Claim(s)	10 claims and 3 pages		-
Abstract	1 page	-	-
No. of Drawing(s)	4 drawings and 4 pages	-	-

(b) ~~Provisional~~/Complete specification (2 copies)

~~(c) Sequence listing in Electronic form~~

(d) Drawings (2 copies)

~~(e) Priority documents or a request to retrieve the priority document(s) from DAS~~

~~(f) Translation of priority document/Specification/International search report/International preliminary Report on patentability.~~

(g) Statement and Undertaking on Form 3 (2 copies)

(h) ~~Declaration of Inventorship on Form 5 (2 copies)~~

~~(i) Power of Authority~~

(j)

19-Feb-2018/11277/201841006184/Form 1

PATENT OFFICE CHENNAI 19/02/2018 15:21

Total fee Rs. 8,900 in Demand Draft bearing No. 575649 dated 13 /02/2018 on State Bank of India.

I hereby declare that to the best of my knowledge, information and belief the fact and matters stated herein are correct and I request that a patent may be granted to me for the said invention.

Dated this 14th day of February 2018.

GORALRAJ MURUGANANTH
(Applicant)

To,
The Controller of Patents
The Patent Office , at Chennai

19-Feb-2018/11277/201841006184/Form 1

PATENT OFFICE CHENNAI 19/02/2018 15:21

700208717

FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

The Patents Rules, 2003

COMPLETE SPECIFICATION

(See section 10; rule 13)

1. Title of the invention : VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF

2. Applicant(s)

(a) NAME : GOPALRAJ, Murugananth

(b) NATIONALITY : Indian

(c) ADDRESS : D23/3, Hari chandra Street,
Pollachi,
Tamilnadu,
India. – 642001.

3. PREAMBLE TO THE DESCRIPTION

The following specification particularly describes the invention and the manner in which it is to be performed.

19-Feb-2018/11277/2018410061 84/Form 2(Title Page)

PATENT OFFICE CHENNAI 19/02/2018 15:21

700208719

FORM 3

THE PATENT ACT, 1970

(39 of 1970)

&

The Patents Rules, 2003

STATEMENT AND UNDERTAKING UNDER SECTION 8

(See Section 8; rule 12)

I, GOPALRAJ. Murugananth. 23/3. Hari chandra Street, Pollachi. Tamilnadu, India. - 642001.

Hereby declare:

(i) that I have not made any application for the same / substantially the same invention outside India .

~~Or~~

(ii) ~~that I/We who have made this application No..... Dated .....alone /jointly with.....made for the same/substantially same invention. application(s) for patent in the other countries, the particulars of which are given below:~~

Name of the Country	Date of application	Application. No.	Status of the Application	Date of Publication	Date of Grant
		NONE			

(iii) that the rights in the application has/have been assigned to : NONE

(iv) that I undertake that up to date of the grant of the patent by the Controller, I would keep him informed in writing the details regarding corresponding applications for patents filed out side India within six months from the date of filing of such application.

Dated this 14th day of February 2018.

GOPALRAJ MURUGANANTH
(Applicant)

To,
The Controller of Patents,
The Patent Office, at Chennai.

PATENT OFFICE CHENNAI 19/02/2018 15:21

19-Feb-2018/11277/201841006184/Form 3

700208722

CBR NO: 45778
Amt: 2750/-
Date: 19/02/2018

19/2/18

FORM 9

THE PATENTS ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
REQUEST FOR PUBLICATION
(See section 11A(2); rule 24A)

I, GOPALRAJ, Murugananth, 23/3, Hari chandra Street, Pollachi, Tamilnadu, India. - 642001..... Hereby request for Early publication of my Application for Patent as Complete specification under Section 11A(2) of the Act.

Dated this 14th day of February 2018.

GOPALRAJ MURUGANANTH
(Applicant)

19-Feb-2018/11277/201841006184/Form 9

PATENT OFFICE CHENNAI 19/02/2018 15:21

700208721

FORM 18
THE PATENTS ACT, 1970
(39 OF 1970)
AND
THE PATENTS RULES, 2003

REQUEST FOR EXAMINATION OF APPLICATION FOR PATENT
[*See* section 11-B and rules 20(4)(*ii*), 24B(1)(*i*)]

(FOR OFFICE USE ONLY)

RQ. No: R201840051 74
Filing Date: 19/02/2018
Amount of Fee Paid: 4400/-
CBR No: 4578
Signature:

19/2/18

1. APPLICANT

(a) NAME : GOPALRAJ, Murugananth

(b) NATIONALITY : Indian

(c) ADDRESS : 23/3, Hari chandra Street,
Pollachi,
Tamilnadu,
India. - 642001.

(d) DATE OF PUBLICATION: (*Earlier publication requested*).

2. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY THE APPLICANT(S)

We hereby request that our application dated 14.02.2018 for the invention titled "VEHICLE IDENTIFICATION DEVICE WITH WIRELESS COMMUNICATION SYSTEM AND A METHOD THEREOF" shall be examined under sections 12 and 13 of the Act.

Or

~~I/We hereby make an express request that my/our application for patent no. filed on based on Patent Cooperation Treaty (PCT) application no. dated made in country shall be examined under sections 12 and 13 of the Act, immediately without waiting for the expiry of 31 months as specifed in rule 20(4)(ii).~~

~~3. STATEMENT IN CASE OF REQUEST FOR EXAMINATION MADE BY ANY OTHER INTERESTED PERSON~~

~~I/We the interested person request for the examination of the application no. dated filed by the applicant titled under sections 12 and 13 of the Act.~~
~~As an evidence of my/our interest in the application for patent following documents are submitted. (a)~~

4. ADDRESS FOR SERVICE :

23/3, Hari chandra Street,
Pollachi,
Tamilnadu,
India. - 642001.
E: gmuruganantth@gmail.com
M: (0) 9942116780

Dated this 14th day of February 2018.

GOPALRAJ MURUGANANTH
(Applicant)

To,
The Controller of Patents
The Patent Office, at Chennai

PATENT OFFICE CHENNAI 19/02/2018 15:21

19-Feb-2018/11277/201841006184/Form 18

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On the recommendation of the Research Team and virtue of authority vested on them, the Regents of Allinnov Gave conferred upon

Dr. JOHN ALEXIS S

The Proud Award of

INVENTOR

Patent Appln. No.: **201741012456.**

Title: **METHOD AND SYSTEM FOR REMOTELY ADJUSTING HEIGHT AND ANGLE OF A WALL MOUNTED TELEVISION FIXER**

With all rights and privilege appertaining thereto

In witness thereof, this Award duly signed has been issued on this 30th Day of March A.D. Two Thousand and Seventeen.

Director

Allinnov Research and Development Private Limited

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On the recommendation of the Research Team and virtue of authority vested on them, the Regents of Allinnov Gave conferred upon

Dr. JOHN ALEXIS S

The Proud Award of

RESEARCHER

Enrollment No. : **INDAITTN100142**
Module No. : **1**

With all rights and privilege appertaining thereto
In witness thereof, this Award duly signed has been issued on this 30th Day of March A.D. Two Thousand and Seventeen.

Director

Allinnov Research and Development Private Limited

PATENT OFFICE
INTELLECTUAL PROPERTY BUILDING
G.S.T. Road, Guindy, Chennai-600032
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CHALLAN : TR-5
DOCKET NO:21135

Date/Time : 09/03/2022

To,
Dr. V. BALAMURUGAN
11 A-3, 21/3 1ST STREET, PERIYAR NAGAR, COIMBATORE - 642109. vbalamurugan19@gmail.com

Agent Number:

Sr. No.	CBR No.	Reference Number /Application Type	Application Number	Title/Remarks	Amount Paid
1	9281	E-12/1724/2022-CHE	202141025398	---	2750
2		E-101/3395/2022-CHE	202141025398	OTHERS(NON CASH)(Form 3)	0
Total :					2750

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