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(71)**Name of Applicant :**
1)Dr. Rajesh Kumar
Address of Applicant :Professor, Deptt. of Electronics & Communication Engg, Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand ----------
2)Mr. Brijesh Kumar
3)Yogesh Kumar
4)Dr. S. Kavitha
5)Dr. Sheshang Degadwala
6)Dr. Sanjeev Gill
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Dr. Rajesh Kumar
Address of Applicant :Professor, Deptt. of Electronics & Communication Engg, Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand ----------
2)Mr. Brijesh Kumar
Address of Applicant :Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand ----------
3)Yogesh Kumar
Address of Applicant :Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand ----------
4)Dr. S. Kavitha
Address of Applicant :Associate Professor, Department of Civil Engineering, Dr. Ambedkar Institute of technology, Outer Ring Road, Nagarbhavi, Bangalore, India - 560056 ----------
5)Dr. Sheshang Degadwala
Address of Applicant :Associate Professor, Sigma Institute of Engineering, Engineering Block, Sigma Group of Institutes, Ajwa-Nimeta Road, Bakrol, Vadodara,Gujarat - 390019 ----------
6)Dr. Sanjeev Gill
Address of Applicant :Head of Department Civil Engineering, JB Institute of Technology, Dehradun, Uttrakhand ----------

(57) Abstract :
The present invention relatesto provide a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements. The system is comprising of data collection units, image capturing unit, machine learning algorithm, alert system. The smart city management system, for instance, might send out an alert if an unauthorised communication switch is discovered in the area, if a wireless 5G signal's characteristics change over time more than a certain threshold, if a signal obstruction occurs, if wireless 5G device usage patterns in the area show an abnormality, and or if other potentially risky activities take place.

No. of Pages : 10 No. of Claims : 2

FORM 1
THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003
APPLICATION FOR GRANT OF PATENT
[See sections 7,54 & 135 and rule 20(1)]

(FOR OFFICE USE ONLY)

Application No.: .....
Filing Date: .....
Amount of Fee Paid: .....
CBR No.: .....
Signature: .....

1. APPLICANT(S):

Sr.No.	Name	Nationality	Address	Country	State	Distict	City
1	Dr. Rajesh Kumar	India	Professor, Deptt. of Electronics & Communication Engg, Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand	India	Uttarakhand	Pauri	
2	Mr. Brijesh Kumar	India	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand	India	Uttarakhand	Haridwar	
3	Yogesh Kumar	India	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand	India	Uttarakhand	Haridwar	
4	Dr. S. Kavitha	India	Associate Professor, Department of Civil Engineering, Dr. Ambedkar Institute of technology, Outer Ring Road, Nagarbhavi, Bangalore, India - 560056	India	Karnataka	Bangalore Urban	
5	Dr. Sheshang [illegible]	India	Associate Professor, [illegible]	India	Gujarat	Vadodara	

			Sigma Group of Institutes, Ajwa-Nimeta Road, Bakrol, Vadodara,Gujarat - 390019				
6	Dr. Sanjeev Gill	India	Head of Department Civil Engineering, JB. Institute of Technology, Dehradun, Uttrakhand	India	Uttarakhand	Dehradun	

2. INVENTOR(S):

Sr.No.	Name	Nationality	Address	Country	State	Distict	City
1	Dr. Rajesh Kumar	India	Professor, Deptt. of Electronics & Communication Engg, Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand	India	Uttarakhand	Pauri	
2	Mr. Brijesh Kumar	India	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand	India	Uttarakhand	Haridwar	
3	Yogesh Kumar	India	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand	India	Uttarakhand	Haridwar	
4	Dr. S. Kavitha	India	Associate Professor, Department of Civil Engineering, Dr. Ambedkar Institute of technology, Outer Ring Road, Nagarbhavi, Bangalore, India -	India	Karnataka	Bangalore Urban	

5	Dr. Sheshang Degadwala	India	Associate Professor, Sigma Institute of Engineering, Engineering Block, Sigma Group of Institutes, Ajwa-Nimeta Road, Bakrol, Vadodara,Gujarat - 390019	India	Gujarat	Vadodara	
6	Dr. Sanjeev Gill	India	Head of Department Civil Engineering, JB. Institute of Technology, Dehradun, Uttrakhand	India	Uttarakhand	Dehradun	

3. TITLE OF THE INVENTION: A Cloud Computing Enabled 5G wireless Sensor Network Comprises IOT Sensor for Smart City Implements

4. ADDRESS FOR CORRESPONDENCE OF APPLICANT / AUTHORISED PATENT AGENT IN INDIA:

Professor, Deptt. of Electronics & Communication Engg, Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand

Telephone No.:
Fax No.:
Mobile No: 9461191512
E-mail: soni.mukesh15@gmail.com

5. PRIORITY PARTICULARS OF THE APPLICATION(S) FILED IN CONVENTION COUNTRY:

Sr.No.	Country	Application Number	Filing Date	Name of the Applicant	Tilte of the Invention

6. PARTICULARS FOR FILING PATENT COOPERATION TREATY (PCT) NATIONAL PHASE APPLICATION:

International Application Number	International Filing Date as Allotted by the Receiving Office
PCT//	

7. PARTICULARS FOR FILING DIVISIONAL APPLICATION

Original (first) Application Number	Date of Filing of Original (first) Application

8. PARTICULARS FOR FILING PATENT OF ADDITION:

Main Application / Patent Number:	Date of Filing of Main Application

9. DECLARATIONS:

(i) Declaration by the inventor(s)

I/We ,Dr. Rajesh Kumar,Mr. Brijesh Kumar,Yogesh Kumar,Dr. S. Kavitha,Dr. Sheshang Degadwala,Dr. Sanjeev Gill, is/are the true & first inventor(s) for this invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date: -----

(b) Signature(s) of the inventor(s): .....

(c) Name(s): Dr. Rajesh Kumar,Mr. Brijesh Kumar,Yogesh Kumar,Dr. S. Kavitha,Dr. Sheshang Degadwala,Dr. Sanjeev Gill

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

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 singnatory: Dr. Rajesh Kumar,Mr. Brijesh Kumar,Yogesh Kumar,Dr. S. Kavitha,Dr. Sheshang Degadwala,Dr. Sanjeev Gill

(iii) Declaration by the applicant(s)

- **The Complete specification relationg to the invention is filed with this application.**
- **I am/We are, in the possession of the above mentioned invention.**
- **There is no lawful ground of objection to the grant of the Patent to me/us.**

10. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION:

Sr.	Document Description	FileName

I/We hereby declare that to the best of my/our knowledge, information and belief the fact and matters stated hering are correct and I/We request that a patent may be granted to me/us for the said invention.

Dated this(Final Payment Date): ----------

Signature: .....

FORM 2

THE PATENT ACT 1970

(39 OF 1970)

AND

The patent rules, 2003

COMPLETE SPECIFICATION

(See section 10: rule 13)

TITLE OF INVENTION

A Cloud Computing Enabled 5G wireless Sensor Network Comprises IOT Sensor for Smart City Implements

APPLICANTS

Name	Nationality	Address
Dr. Rajesh Kumar	Indian	Professor, Deptt. of Electronics & Communication Engg, Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand
Mr. Brijesh Kumar	Indian	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand
Yogesh Kumar	Indian	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand
Dr. S. Kavitha	Indian	Associate Professor, Department of

		Civil Engineering, Dr. Ambedkar Institute of technology, Outer Ring Road, Nagarbhavi, Bangalore, India - 560056
Dr. Sheshang Degadwala	Indian	Associate Professor, Sigma Institute of Engineering, Engineering Block, Sigma Group of Institutes, Ajwa-Nimeta Road, Bakrol, Vadodara,Gujarat - 390019
Dr. Sanjeev Gill	Indian	Head of Department Civil Engineering, JB. Institute of Technology, Dehradun, Uttrakhand

PREAMBLE TO THE DESCRIPTION

COMPLETE

Following specification particularly describes the invention and the manner in which it is to be performed.

Technical field of invention:

The present invention relatesto provide a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

Background:

Smart city is provided all high-quality services to resident. Smart city having high quality connectivity system like as high-quality road, grid of road lights, systematic drainage system, rainwater conservation system, timely water supply, maintained parks, clean road and public premises, high security, availability of clean water, grans, groceries, 5G internet connectivity etc.

Therefore, smart city management is tedious task. Hence require a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

The smart city management system may make use of the data gathered to enhance the communication switches' chosen locations in the smart city as well as the autonomous capabilities of these transportation devices, such as better signal strength and coverage and the ability to avoid physical objects.

Groupings of alternative elements or embodiments of the invention disclosed herein are not to be construed as limitations. Each group member can be referred to and claimed individually or in any combination with other members of the group or other elements found herein. One or more members of a group can be included in, or deleted from, a group for reasons of convenience and/or patentability. When any such inclusion or deletion occurs, the specification is

herein deemed to contain the group as modified thus fulfilling the written description of all Markush groups used in the appended claims.

The recitation of ranges of values herein is merely intended to serve as a shorth and method of referring individually to each separate value falling within the range. Unless otherwise indicated herein, each individual value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context.

The use of any and all examples, or exemplary language (e.g., "such as") provided with respect to certain embodiments herein is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention otherwise claimed. No language in the specification should be construed as indicating any non-claimed element essential to the practice of the invention.

The above information disclosed in this Background section is only for enhancement of understanding of the background of the invention and therefore it may contain information that does not form the prior art that is already known in this country to a person of ordinary skill in the art.

Objective of the invention

The primary object of thepresent invention isto provide a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

Summary of the invention:

The present inventionrelatesto provide a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

Smart city is provided all high-quality services to resident. Smart city having high quality connectivity system like as high-quality road, grid of road lights, systematic drainage system, rainwater conservation system, timely water supply, maintained parks, clean road and public premises, high security, availability of clean water, grans, groceries, 5G internet connectivity etc.

Therefore, smart city management is tedious task. Hence require a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

The smart city management system may make use of the data gathered to enhance the communication switches' chosen locations in the smart city as well as the autonomous capabilities of these transportation devices, such as better signal strength and coverage and the ability to avoid physical objects.

To help with communication and planning relating to infrastructure, construction, and/or other transportation-related needs, some examples of smart city management systems may provide information related to infrastructure e.g., roads, and/or other infrastructure objects that are under wireless signals.

The wireless smart gadgets in a place may be tracked by a smart city management system. The management system for the smart city may monitor the use of devices to measure traffic, identify the types of devices being used, monitor the effectiveness of the positioning of current communication switches,

update the positioning of communication switches in the area, and/or otherwise optimize the positioning of communication switches in the smart city.

The smart city management system, for instance, might send out an alert if an unauthorised communication switch is discovered in the area, if a wireless signal's characteristics change over time more than a certain threshold, if a signal obstruction occurs, if wireless device usage patterns in the area show an abnormality, and/or if other potentially risky activities take place.

The system is comprising of data collection units, image capturing unit, machine learning algorithm, alert system.

Method:

1. The data is collected from various sources like as infrastructure units, image capturing units etc.

2. Tarin the machine learning algorithm,

3. Automatic management and send alert if any discrepancy to control room.

Brief description of drawings

Figure 1 shows a block diagram representation of a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implementsaccording to the present invention.

Detailed description of invention:

The following description includes the preferred best mode of one embodiment of the present invention. It will be clear from this description of the invention that the invention is not limited to these illustrated embodiments but that the invention also includes a variety of modifications and embodiments thereto. Therefore, the present description should be seen as illustrative and not limiting. While the invention is susceptible to various modifications and alternative constructions, it should be understood, that there is no intention to limit the invention to the specific form disclosed, but, on the contrary, the invention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention as defined in the claims.

In any embodiment described herein, the open-ended terms "comprising," "comprises," and the like (which are synonymous with "including," "having" and "characterized by") may be replaced by the respective partially closed phrases "consisting essentially of," consists essentially of," and the like or the respective closed phrases "consisting of," "consists of, the like.

The present invention relates to provide a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

Smart city is provided all high-quality services to resident. Smart city having high quality connectivity system like as high-quality road, grid of road lights, systematic drainage system, rainwater conservation system, timely water supply, maintained parks, clean road and public premises, high security, availability of clean water, grans, groceries, 5G internet connectivity etc.

Therefore, smart city management is tedious task. Hence require a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

Thesmart city management system may make use of the data gathered to enhance the communication switches' chosen locations in the smart city as well as the autonomous capabilities of these transportation devices, such as better signal strength and coverage and the ability to avoid physical objects.

To help with communication and planning relating to infrastructure, construction, and/or other transportation-related needs, some examples of smart city management systems may provide information related to infrastructure e.g., roads, and/or other infrastructure objects that are under wireless signals.

Thewireless smart gadgets in a place may be tracked by a smart city management system. The management system for the smart city may monitor the use of devices to measure traffic, identify the types of devices being used, monitor the effectiveness of the positioning of current communication switches, update the positioning of communication switches in the area, and/or otherwise optimize the positioning of communication switches in the smart city.

The smart city management system, for instance, might send out an alert if an unauthorised communication switch is discovered in the area, if a wireless signal's characteristics change over time more than a certain threshold, if a signal obstruction occurs, if wireless device usage patterns in the area show an abnormality, and/or if other potentially risky activities take place.

The system is comprising of data collection units, image capturing unit, machine learning algorithm, alert system.

Method:

1. The data is collected from various sources like as infrastructure units, image capturing units etc.

2. Tarin the machine learning algorithm,

3. Automatic management and send alert if any discrepancy to control room.

We Claims:

1. a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements.

2. a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements claimed in claim 1,steps of method:
    1. The data is collected from various sources like as infrastructure units, image capturing units etc.

    2. Tarin the machine learning algorithm,

    3. Automatic management and send alert if any discrepancy to control room.

Abstract

The present invention relatesto provide a cloud computing enabled 5G wireless sensor network comprises IoT sensor for smart city implements. The system is comprising of data collection units, image capturing unit, machine learning algorithm, alert system.The smart city management system, for instance, might send out an alert if an unauthorised communication switch is discovered in the area, if a wireless 5G signal's characteristics change over time more than a certain threshold, if a signal obstruction occurs, if wireless 5G device usage patterns in the area show an abnormality, and/or if other potentially risky activities take place.

FORM 3

THE PATENT ACT 1970

(39 OF 1970)

AND

The patent rules, 2003

STATEMENT AND UNDERTAKING UNDER SECTION 8

(See section 8; rule 12)

We,

Name	Nationality	Address
Dr. Rajesh Kumar	Indian	Professor, Deptt. of Electronics & Communication Engg. Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand
Mr. Brijesh Kumar	Indian	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand
Yogesh Kumar	Indian	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand
Dr. S. Kavitha	Indian	Associate Professor, Department of Civil Engineering, Dr. Ambedkar Institute of technology, Outer Ring Road, Nagarbhavi, Bangalore, India - 560056
Dr. Sheshang Degadwala	Indian	Associate Professor, Sigma Institute of Engineering, Engineering Block, Sigma Group of Institutes, Ajwa-Nimeta Road,

		Bakrol, Vadodara,Gujarat - 390019
Dr. Sanjeev Gill	Indian	Head of Department Civil Engineering, JB. Institute of Technology, Dehradun, Uttrakhand

Hereby declare:-

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

Dated this 03rd day of Feb 2023

Dr. Rajesh Kumar

Mr. Brijesh Kumar

Yogesh Kumar

Dr. S. Kavitha

Dr. Sheshang Degadwala

Dr. Sanjeev Gill

To,

The Controller of Patents

The Patent Office

At Mumbai/ Delhi/ Chennai/ Kolkata

FORM 5

THE PATENTS ACT, 1970
(39 OF 1970)
&
THE PATENTS RULES, 2003
DECLARATION AS TO INVENTORSHIP

[See Section 10(6) and rule 13 (6)]

1. APPLICANT(S)

Name	Nationality	Address
Dr. Rajesh Kumar	Indian	Professor, Deptt. of Electronics & Communication Engg, Govind Ballabh Pant Institute of Engg. & Technology, Ghurdauri, Pauri Garhwal, Uttarakhand
Mr. Brijesh Kumar	Indian	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand
Yogesh Kumar	Indian	Assistant Professor, Department of Electrical Engineering, Faculty of Engineering and Technology GK(DU) Haridwar, Uttrakhand
Dr. S. Kavitha	Indian	Associate Professor, Department of Civil Engineering, Dr. Ambedkar Institute of technology, Outer Ring Road, Nagarbhavi, Bangalore, India - 560056
Dr. Sheshang Degadwala	Indian	Associate Professor, Sigma Institute of Engineering, Engineering Block, Sigma Group of Institutes, Ajwa-Nimeta Road, Bakrol, Vadodara,Gujarat - 390019
Dr. Sanjeev Gill	Indian	Head of Department Civil Engineering, JB. Institute of Technology, Dehradun,

		Uttrakhand

hereby declare that we are the true and first inventor(s) of the invention disclosed in the complete specification filed in pursuance of our application.

Dated this 03rd day of Feb 2023

Dr. Rajesh Kumar

Mr. Brijesh Kumar

Yogesh Kumar

Dr. S. Kavitha

Dr. Sheshang Degadwala

Dr. Sanjeev Gill

FORM 9

THE PATENT ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003

REQUEST FOR PUBLICATION

[See section 11A (2) rule 24A]

I/We **Dr. Rajesh Kumar,Mr. Brijesh Kumar,Yogesh Kumar,Dr. S. Kavitha,Dr. Sheshang Degadwala,Dr. Sanjeev Gill** hereby request for early publication of my/our [Patent Application No.] TEMP/E-1/86011/2023-DEL

Dated **03/02/2023 00:00:00** under section 11A(2) of the Act.

Dated this(Final Payment Date):----------
Signature
Name of the signatory

To,
The Controller of Patents,
The Patent Office,
At New Delhi

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Sheet 1/1

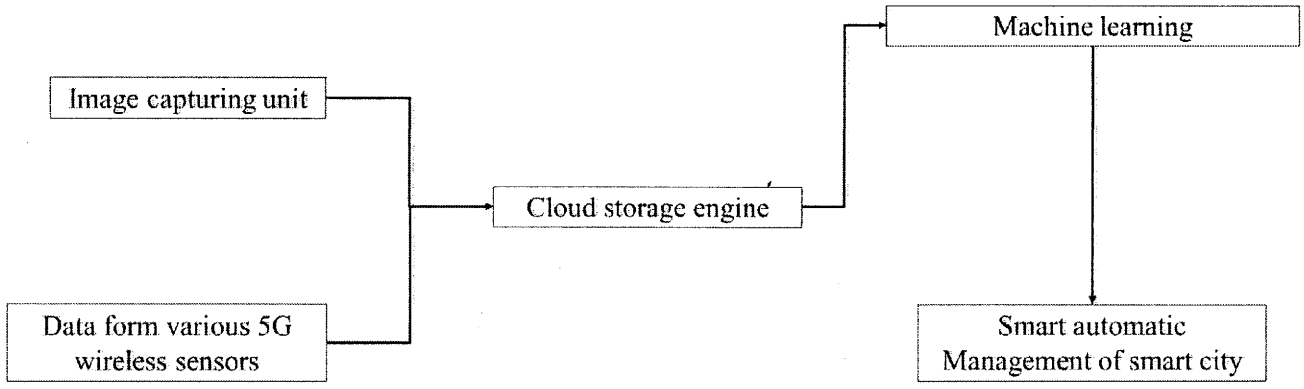

Figure 1 shows a block diagram representation of a cloud computing enabled 5g wireless sensor network comprises IoT sensor for smart city implements.