पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 41/2022	शुक्रवार	दिनांक: 14/10/2022
ISSUE NO. 41/2022	FRIDAY	DATE: 14/10/2022

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :07/10/2022

(21) Application No.202241057601 A
(43) Publication Date : 14/10/2022

(54) Title of the invention : AN IOT EMBEDDED SMART ANTENNA ASSISTED BY ENHANCED MACHINE LEARNING SYSTEM AND METHOD THEREOF

(51) International classification :H04B0003520000, H04B0007080000, G06N0020000000, G01R0031000000, H01Q0001240000
(86) International Application No Filing Date :PCT// :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

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(57) Abstract :
The present invention discloses an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof. The system includes, but not limited to, a first guided electromagnetic wave guided by a surface of a transmission medium, the first guided electromagnetic wave comprising a first signal previously modulated in a cellular band; a machine learning based processing unit, coupled to the memory, to facilitate execution of the instructions to perform operations, including: receiving the first signal from the first guided electromagnetic wave. Further, a subcarrier signal from a set of subcarrier signals received from a set of base station IoT based devices is directed to a specific wireless communication device of a set of wireless communication devices according to routing information included in a first wireless signal. Accompanied Drawing [FIGS. 1-2]

No. of Pages : 20 No. of Claims : 8

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)

	Application No.	
	Filing date:	
	Amount of Fee paid:	
	CBR No:	
	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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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 Inventor
Same as Applicant			

5. TITLE OF THE INVENTION

"AN IOT EMBEDDED SMART ANTENNA ASSISTED BY ENHANCED MACHINE LEARNING SYSTEM AND METHOD THEREOF"

6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	
	Name	
	Mobile 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~~

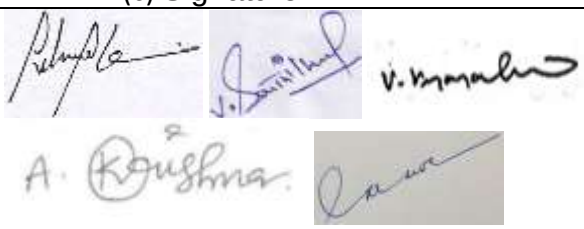
12. DECLARATIONS

(i) Declaration by the inventor(s)

(**In case the applicant is an assignee**: the inventor(s) 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/We, the above named inventor(s) 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 07/10/2022

(b) Name	(c) Signature
1. Mr. V L N Phani Ponnapalli 2. Jayaram Boga 3. Ms. K. Maheswari Devi 4. Dr. V. Senthilkumar 5. Mr. Vijayabhaskar V 6. Mr. Azmira Krishna 7. Dr. C. R. Rene Robin	

~~**(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~~

(iii) Declaration by the applicant(s)

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

- € ~~I am/~~ We are in possession of the above-mentioned invention.
- € The ~~provisional~~/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 me/us before the grant of patent to me/us.~~
- € There is no lawful ground of objection(s) to the grant of the Patent to me/us.

€ ~~I am~~/we are the true & first inventor(s).

€ ~~I am/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).~~

€ ~~I/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 I/We derive the title.~~

€ ~~My/our 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 /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.~~

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete/ ~~Provisional~~ specification) #	No. of pages: 16		
No. of Claim(s)	No. of claims: 08 No. of pages: 02		
Abstract	No. of pages: 01		
No. of Drawing(s)	No. of drawings: 02 No. of pages: 01		

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

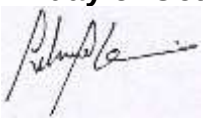
(h) Declaration of Inventorship on Form 5

(i)Power of Authority

(j)**Total fee ₹…….in Cash/ Banker's Cheque /Bank Draft bearing No..... Date on ……. Bank.**

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

Dated this 7th day of October 2022

Signature: 

Name: Mr. V L N Phani Ponnapalli et.al.

To,

The Controller of Patents

The Patent Office, at Chennai

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";

FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

The Patent Rules, 2003

COMPLETE SPECIFICATION

(See section 10 and rule 13)

TITLE OF THE INVENTION

"AN IOT EMBEDDED SMART ANTENNA ASSISTED BY ENHANCED MACHINE LEARNING SYSTEM AND METHOD THEREOF"

We, applicant(s)

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The following specification particularly describes the nature of the invention and the manner in which it is performed:

FIELD OF THE INVENTION

[001] The present invention relates to the field of devices, systems and methods based on IoT embedded smart antenna. The invention more particularly relates to an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof.

BACKGROUND OF THE INVENTION

[002] The following description provides the information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[003] Further, the approaches described in this section are approaches that could be pursued, but not necessarily approaches that have been previously conceived or pursued. Therefore, unless otherwise indicated, it should not be assumed that any of the approaches described in this section qualify as prior art merely by virtue of their inclusion in this section.

[004] The term "5G" refers to the fifth generation of mobile technology. After the impending 4G standards, 5G is the next major stage of mobile communications standards. Most high-bandwidth users will be able to utilise their phones in novel ways with 5G technology. People experience record call volumes and data transfer rates when 5G is applied to a VOIP-capable device. We examined 5G smart antennas for Internet of Things (IoT) applications in this study. A 5G active antenna approach called beamforming employs directed radio connections to simultaneously and arbitrarily provide high bandwidth to a subset of mobile devices. When exploiting wider frequency

ranges, several antenna systems are necessary. The frequency increases with improved electromagnetic wave propagation conditions. Multi-antenna arrays and beamforming can help to some extent to reduce this. Beamforming enables the spatially focused transmission and reception of radio signals. There are more accessible dipoles (antenna elements) the better the beamforming performs. 5G will not need significant technological advancements, in contrast to prior wireless networking eras like the Global System For Mobile Communication (GSM), Universal Mobile Telecommunication System (UMTS), as well as 4G/LTE.

[005] Accordingly, on the basis of aforesaid facts, there remains a need in the prior art to provide an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof. The proposed system overcomes the problem of conventional and complex techniques, and which have the potential of accelerating through the various intelligent modules. Therefore, it would be useful and desirable to have a system, method, apparatus and interface to meet the above-mentioned needs.

SUMMARY OF THE PRESENT INVENTION

[006] In view of the foregoing disadvantages inherent in the known types of conventional antenna assembly, systems, methods and techniques, are now present in the prior art, the present invention provides an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof, which has all the advantages of the prior art and none of the disadvantages.

[007] It is an important aspect of the present invention, a machine learning-based processing unit, coupled to the memory, to facilitate execution of the instructions to perform operations, such as: receiving the first signal from the

first guided electromagnetic wave; a first guided electromagnetic wave guided by the surface of a transmission medium, the first guided electromagnetic wave comprising a first signal previously modulated in a cellular band.

[008] It is another important aspect of the present invention, wherein according to routing information included in a first wireless signal, a subcarrier signal from a collection of subcarrier signals received from a set of base station IoT-based devices is directed to a particular wireless communication device of a set of wireless communication devices. a wireless communication device that transmits a second wireless signal to the antenna in the cellular band, supplying the second wireless signal, and extracting a second signal.

[009] The proposed system and method is implemented on the processing unit functioning with, but not limited to, the Field Programmable Gate Arrays (FPGAs) and the like, PC, Microcontroller and with other known processors to have computer algorithms and instruction up gradation for supporting many applications domain where the aforesaid problems to solution is required.

[010] In this respect, before explaining at least one object of the invention in detail, it is to be understood that the invention is not limited in its application to the details of set of rules and to the arrangements of the various models set forth in the following description or illustrated in the drawings. The invention is capable of other objects and of being practiced and carried out in various ways, according to the need of that industry. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

[011] These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with

particularity in the disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be made to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[012] The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

[013] FIG. 1, illustrates a schematic diagram of an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof, in accordance with an embodiment of the present invention; and

[014] FIG. 2, illustrates another block diagram of the IoT embedded smart antenna assisted by enhanced machine learning system and method thereof, in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[015] While the present invention is described herein by way of example using embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the embodiments of drawing or drawings described and are not intended to represent the scale of the various components. Further, some components that may form a part of the invention may not be illustrated in certain figures, for ease of illustration, and such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and detailed description thereto are not intended

to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the scope of the present invention as defined by the appended claims. As used throughout this description, the word "may" is used in a permissive sense (i.e. meaning having the potential to), rather than the mandatory sense, (i.e. meaning must). Further, the words "a" or "an" mean "at least one" and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein is solely used for descriptive purposes and should not be construed as limiting in scope. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed thereafter, equivalents, and additional subject matter not recited, and is not intended to exclude other additives, components, integers or steps. Likewise, the term "comprising" is considered synonymous with the terms "including" or "containing" for applicable legal purposes. Any discussion of documents, acts, materials, devices, articles and the like is included in the specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention.

[016] In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase "comprising", it is understood that we also contemplate the same composition, element or group of elements with transitional phrases "consisting of", "consisting", "selected

from the group of consisting of, “including”, or “is” preceding the recitation of the composition, element or group of elements and vice versa.

[017] The present invention is described hereinafter by various embodiments with reference to the accompanying drawings, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein. Rather, the embodiment is provided so that this disclosure will be thorough and complete and will fully convey the scope of the invention to those skilled in the art. In the following detailed description, numeric values and ranges are provided for various aspects of the implementations described. These values and ranges are to be treated as examples only and are not intended to limit the scope of the claims. In addition, a number of materials are identified as suitable for various facets of the implementations. These materials are to be treated as exemplary and are not intended to limit the scope of the invention.

[018] Referring now to the drawings, these are illustrated in FIG. **1** & **2**, the present invention discloses an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof. The system is comprised of, but not limited to, a first guided electromagnetic wave guided by a surface of a transmission medium, the first guided electromagnetic wave comprising a first signal previously modulated in a cellular band; a machine learning based processing unit, coupled to the memory, to facilitate execution of the instructions to perform operations, including: receiving the first signal from the first guided electromagnetic wave.

[019] In accordance with another embodiment of the present invention, a subcarrier signal from a set of subcarrier signals received from a set of base station IoT based devices is directed to a specific wireless communication device of a set of wireless communication devices according to routing information included in a first wireless signal.

[020] In accordance with another embodiment of the present invention, a wireless communication device transmitting a second wireless signal to the antenna, the second wireless signal being in the cellular band and providing the second wireless signal and extracting a second signal.

[021] In accordance with another embodiment of the present invention, a means for transmitting a second signal to the base station IoT based device to which the second signal relates after identifying the base station device from a group of base station devices.

[022] In accordance with another embodiment of the present invention, the processing unit provided with the IoT device that is physically connected to the memory to enable the execution of the instructions to carry out the activities, which enabling the reception of a first guided wave obtained through a power line and the initial directed wave is transformed into an electrical transmission.

[023] In accordance with another embodiment of the present invention, the second means for transforming the electronic transmission into a second guided wave and enabling transmission of the second guided wave over the power line and facilitating transmission of an electronic signal determined from the electronic transmission to a base station device.

[024] In accordance with another embodiment of the present invention, an IoT based module is created a quick, trustworthy handover mechanism using a deep learning-based LSTM algorithm and a plan tracks the user's mobility to construct a user profile in the IoT environment rather than utilising CSI to generate a unique static fingerprint.

[025] In accordance with another embodiment of the present invention, a distance-based threshold demonstrates the absence of temporal association between the intruder and the legal equipment and further, the accuracy of identifying attackers is improved and the likelihood of false positives is decreased by increasing the number of authentication requests.

[026] Further, the exemplary computer system for implementing various embodiments consistent with the present disclosure, which may be used for implementing an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof. Computer system may comprise a central processing unit (“CPU” or “processor”). Processor may comprise at least one data processor for executing program components for executing user or system-generated requests. A user may include a person, a person using a device such as such as those included in this disclosure, or such a device itself. The processor may include specialized processing units such as integrated system (bus) controllers, memory management control units, floating point units, graphics processing units, digital signal processing units, etc. The processor may include a microprocessor, such as AMD Athlon, Duron or Opteron, ARM’s application, embedded or secure processors, IBM PowerPC, Intel’s Core, Itanium, Xeon, Celeron or other line of processors, etc. The processor may be implemented using mainframe, distributed processor,

multi-core, parallel, grid, or other architectures. Some embodiments may utilize embedded technologies like application-specific integrated circuits (ASICs), digital signal processors (DSPs), Field Programmable Gate Arrays (FPGAs), etc.

[027] Processor may be disposed in communication with one or more input/output (I/O) devices via I/O interfaces. The I/O interfaces may employ communication protocols/methods such as, without limitation, audio, analog, digital, monoaural, RCA, stereo, IEEE-1394, serial bus, universal serial bus (USB), infrared, PS/2, BNC, coaxial, component, composite, digital visual interface (DVI), high-definition multimedia interface (HDMI), RF antennas, S-Video, VGA, IEEE 802.n /b/g/n/x, Bluetooth, cellular (e.g., code-division multiple access (CDMA), high-speed packet access (HSPA+), global system for mobile communications (GSM), long-term evolution (LTE), WiMax, or the like), etc.

[028] In some embodiments, the processor may be disposed in communication with one or more memory devices (e.g., RAM, ROM, etc.) via a storage interface. The storage interface may connect to memory devices including, without limitation, memory drives, removable disc drives, etc., employing connection protocols such as serial advanced technology attachment (SATA), integrated drive electronics (IDE), IEEE-1394, universal serial bus (USB), fiber channel, small computer systems interface (SCSI), etc. The memory drives may further include a drum, magnetic disc drive, magneto-optical drive, optical drive, redundant array of independent discs (RAID), solid-state memory devices, solid-state drives, etc. The memory devices may store a collection of program or database components, including, without limitation,

an operating system, user interface application, web browser, mail server, mail client, user/application data (e.g., any data variables or data records discussed in this disclosure), etc. The operating system may facilitate resource management and operation of the computer system. Examples of operating systems include, without limitation, Apple Macintosh OS X, Unix, Unix-like system distributions (e.g., Berkeley Software Distribution (BSD), FreeBSD, NetBSD, OpenBSD, etc.), Linux distributions (e.g., Red Hat, Ubuntu, Kubuntu, etc.), IBM OS/2, Microsoft Windows, Apple iOS, Google Android, Blackberry OS, or the like.

[029] The word “module,” “model” “algorithms” and the like as used herein, refers to logic embodied in hardware or firmware, or to a collection of software instructions, written in a programming language, such as, for example, Java, C, Python or assembly. One or more software instructions in the modules may be embedded in firmware, such as an EPROM. It will be appreciated that modules may comprised connected logic units, such as gates and flip-flops, and may comprise programmable units, such as programmable gate arrays or processors. The modules described herein may be implemented as either software and/or hardware modules and may be stored in any type of computer-readable medium or other computer storage device. Further, in various embodiments, the processor is one of, but not limited to, a general-purpose processor, an application specific integrated circuit (ASIC) and a field-programmable gate array (FPGA) processor. Furthermore, the data repository may be a cloud-based storage or a hard disk drive (HDD), Solid state drive (SSD), flash drive, ROM or any other data storage means.

[030] The above-mentioned invention is provided with the preciseness in its real-world applications to provide an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof. Further, the present invention comprises ongoing real-time support provided over a cloud or any kind of wireless network such as the Internet, wherein ideas and recommended practices are shared.

[031] It is to be understood that the above description is intended to be illustrative, and not restrictive. For example, the above-discussed embodiments may be used in combination with each other. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description.

[032] The benefits and advantages which may be provided by the present invention have been described above with regard to specific embodiments. These benefits and advantages, and any elements or limitations that may cause them to occur or to become more pronounced are not to be construed as critical, required, or essential features of any or all of the embodiments.

[033] While the present invention has been described with reference to particular embodiments, it should be understood that the embodiments are illustrative and that the scope of the invention is not limited to these embodiments. Many variations, modifications, additions and improvements to the embodiments described above are possible. It is contemplated that these variations, modifications, additions and improvements fall within the scope of the invention.

We Claim:

1. A convolutional neural network based vehicle communication system over a hybrid spectrum, comprising:

a first guided electromagnetic wave guided by a surface of a transmission medium, the first guided electromagnetic wave comprising a first signal previously modulated in a cellular band; a machine learning based processing unit, coupled to the memory, to facilitate execution of the instructions to perform operations, including: receiving the first signal from the first guided electromagnetic wave.

2. The system as claimed in claim **1**, wherein a subcarrier signal from a set of subcarrier signals received from a set of base station IoT based devices is directed to a specific wireless communication device of a set of wireless communication devices according to routing information included in a first wireless signal.

3. The system as claimed in claim **1**, wherein a wireless communication device transmitting a second wireless signal to the antenna, the second wireless signal being in the cellular band and providing the second wireless signal and extracting a second signal.

4. The system as claimed in claim **1**, wherein a means for transmitting a second signal to the base station IoT based device to which the second signal relates after identifying the base station device from a group of base station devices.

5. The system as claimed in claim **1**, wherein the processing unit provided with the IoT device that is physically connected to the memory to enable the execution of the instructions to carry out the activities, which enabling the

reception of a first guided wave obtained through a power line and the initial directed wave is transformed into an electrical transmission.

6. The system as claimed in claim **1**, wherein the second means for transforming the electronic transmission into a second guided wave and enabling transmission of the second guided wave over the power line and facilitating transmission of an electronic signal determined from the electronic transmission to a base station device.

7. The system as claimed in claim **1**, wherein an IoT based module is created a quick, trustworthy handover mechanism using a deep learning-based LSTM algorithm and a plan tracks the user's mobility to construct a user profile in the IoT environment rather than utilising CSI to generate a unique static fingerprint.

8. The system as claimed in claim **1**, wherein a distance-based threshold demonstrates the absence of temporal association between the intruder and the legal equipment and further, the accuracy of identifying attackers is improved and the likelihood of false positives is decreased by increasing the number of authentication requests.

Dated this 7th day of October 2022

Signature: 

Applicant(s)

Mr. V L N Phani Ponnapalli et. al.

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ABSTRACT

AN IOT EMBEDDED SMART ANTENNA ASSISTED BY ENHANCED MACHINE LEARNING SYSTEM AND METHOD THEREOF

[034] The present invention discloses an IoT embedded smart antenna assisted by enhanced machine learning system and method thereof. The system includes, but not limited to, a first guided electromagnetic wave guided by a surface of a transmission medium, the first guided electromagnetic wave comprising a first signal previously modulated in a cellular band; a machine learning based processing unit, coupled to the memory, to facilitate execution of the instructions to perform operations, including: receiving the first signal from the first guided electromagnetic wave. Further, a subcarrier signal from a set of subcarrier signals received from a set of base station IoT based devices is directed to a specific wireless communication device of a set of wireless communication devices according to routing information included in a first wireless signal.

Accompanied Drawing **[FIGS. 1-2]**

Dated this 7th day of October 2022

Signature: 

Applicant(s)

Mr. V L N Phani Ponnapalli et. al.

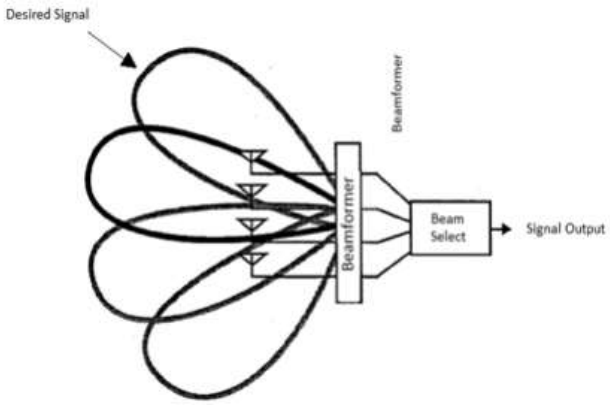

Fig. 1

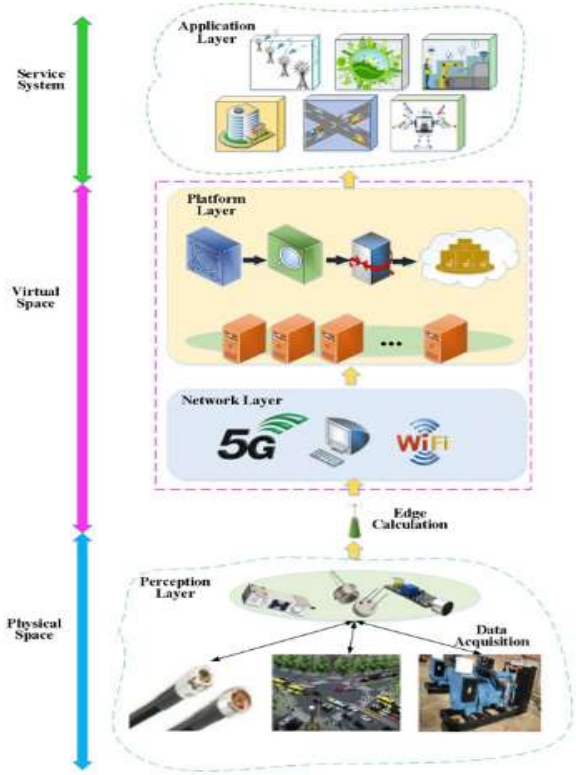

Fig. 2

Dated this 7th day of October 2022

Signature:

FORM 3

THE PATENTS ACT,
1970 (39 of 1970)
and
THE PATENTS RULES, 2003

STATEMENT AND UNDERTAKING UNDER SECTION 8

(See section 8; Rule 12)

1. Name of the applicant(s).	I/We Mr. V L N Phani Ponnapalli et. al., all are citizen of India, Address of one of the Applicant: Assistant Professor, Department of ECE, Vikas College of Engineering and Technology, Nunna, Vijayawada Rural, NTR District, Andhra Pradesh 521212.
2. Name, address and nationality of the joint applicant.	(i) that I/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
-	-	-	-	-	-

3. Name and address of the assignee	(iii) that the rights in the application(s) has/have been assigned to …… none …… …… …… that I/We undertake that upto the date of grant of the patent by the Controller, I/We would keep him informed in writing the details regarding corresponding applications for patents filed outside India within six months from the date of filing of such application. **Dated this 7th day of October 2022**

4. To be signed by the applicant or his authorized registered patent agent.	**Signature:** 
5. Name of the natural person who has signed.	Mr. V L N Phani Ponnapalli et. al. **Name of the Applicant(s)**
	To The Controller of Patents, The Patent Office, at Chennai
Note.- Strike out whichever is not applicable;	

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. NAME OF THE APPLICANT

I/We Mr. V L N Phani Ponnapalli et. al., all are citizen of India, Address of one of the Applicant: Assistant Professor, Department of ECE, Vikas College of Engineering and Technology, Nunna, Vijayawada Rural, NTR District, Andhra Pradesh 521212.

hereby declare that the true and first inventor(s) of the invention disclosed in the complete specification filed in pursuance of ~~my~~ / our application numbered _____ dated 07-10-2022 ~~is/~~are

2. INVENTOR(S)

(a) NAME	**(b) NATIONALITY**	**(c) ADDRESS**
1. Mr. V L N Phani Ponnapalli	Indian	Assistant Professor, Department of ECE, Vikas College of Engineering and Technology, Nunna, Vijayawada Rural, NTR District, Andhra Pradesh 521212
2. Jayaram Boga	Indian	Assistant Professor, Department of Computer Science and Data Science, Marri Laxman Reddy Institute of Technology and Management, Pally, Telangana 500043
3. Ms. K. Maheswari Devi	Indian	Assistant Professor, Department of Electronics and Communication Engineering, Malla Reddy Engineering College (Autonomous), Dhulapally, Secunderabad, Telangana-500100
4. Dr. V. Senthilkumar	Indian	Associate Professor, Department of Electronics and Communication Engineering, Er. Perumal Manimekalai College of Engineering, Koneripalli-Hosur Tamilnadu-635117
5. Mr. Vijayabhaskar V	Indian	Assistant Professor,

		Department of Science and Humanities (General Engineering), R.M.K. Engineering College, Kavaraipettai, Thiruvallur District, Tamil Nadu - 601 206
6. Mr. Azmira Krishna	Indian	Assistant Professor, Department of CSE, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, A.P-522502
7. Dr. C. R. Rene Robin	Indian	Professor & Dean (Innovation), Department of Computer Science and Engineering, Sri Sai Ram Engineering College, West Tambaram, Chennai, Tamil Nadu 600044

~~3. DECLARATION TO BE GIVEN WHEN THE APPLICATION IN INDIA IS FILED BY THE APPLICANT(S) IN THE CONVENTION COUNTRY: -~~

N.A.

~~We the applicant(s) in the convention country hereby declare that our right to apply for a patent in India is by way of assignment from the true and first inventor(s).~~

Dated this 7th day of October 2022

Mr. V L N Phani Ponnapalli et. al.
Applicant(s)

To,
The Controller of Patents
The Patent Office, Chennai

FORM 9

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

REQUEST FOR PUBLICATION

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

I/We **Mr. V L N Phani Ponnapalli,Jayaram Boga,Ms. K. Maheswari Devi,Dr. V. Senthilkumar,Mr. Vijayabhaskar V,Mr. Azmira Krishna,Dr. C. R. Rene Robin** hereby request for early publication of my/our [Patent Application No.] TEMP/E-1/66153/2022-CHE

Dated **07/10/2022 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 Chennai

This form is electronically generated.