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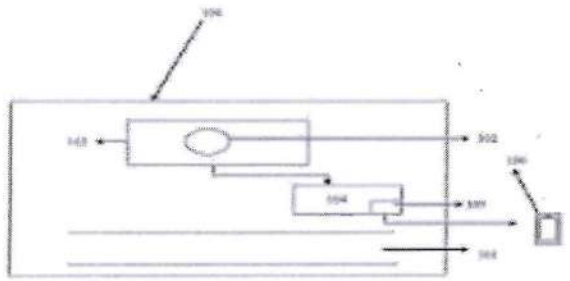
(57) Abstract :
Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System is the proposed invention. The proposed invention focuses on implementing a framework of Artificial Intelligence for analyzing the safety in construction system. The invention also aims at integrating the aspects of (Internet of Things) IOT in order to inform the concerned persons when there are unfavorable situation.



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FORM 2

THE PATENTS ACT, 1970

(39 OF 1970)

AND

THE PATENT RULES, 2003

COMPLETE SPECIFICATION

(See section 10 and rule 13)

Title of Invention:

"ARTIFICIAL INTELLIGENCE BASED TECHNIQUES INTEGRATED WITH INTERNET OF THINGS (IOT) FOR IMPLEMENTING SAFETY CONSTRUCTION MANAGEMENT SYSTEM"

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

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FIELD OF INVENTION

The present invention relates to the field of designing & implementing a framework of Artificial Intelligence for implementing safety construction management system. The proposed invention also focuses on implementing the techniques of Artificial Intelligence with (Internet of Things) IOT for achieving better safety in construction.

BACKGROUND OF INVENTION

[0001] Background description includes 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.

[0002] Roads make a crucial contribution to economic development and growth and bring important social benefits. They are of vital importance in order to make a nation grow and develop. In addition, providing access to employment, social, health and education services make a road network crucial in fighting against poverty.

[0003] A number of different types of safety road construction techniques that are known in the prior art. For example, the following patents are provided for their supportive teachings and are all incorporated by reference.

[0004] SG10201707635WA This application provides system design and associated methods for implementation of a virtual cleaning supervisor (VCS) in smart buildings for enabling predictive cleaning in washrooms. Appropriate

sensors are installed within a washroom at various locations that measure its cleanliness in real-time. This cleanliness quantification is facilitated by measuring the indoor air quality using concentrations of various gases, people usage pattern, wetness detection on floors, and consumer feedback. Artificial intelligence (AI) based machine learning algorithms are designed on the cloud servers that match the observed values with those observed in the past to detect anomalies and send cleaning alerts to respective cleaners if cleaning or a check is required. It is noted that this sensor network setup within washrooms does not involve the use of any camera-based imaging systems. Further, reports are generated that allow facility managers to track cleaning operations and cleaning companies to evaluate their workforce using a time to service parameter generated by the AI engine. FIG. 3 best represents the invention to be published.

[0005] US10648688B2 A method for verifying and running a script for a building management system of a building includes receiving, by the building management system, the script, wherein the script indicates one or more operations to be performed with one or more data points of a data model of the building, determining, by the building management system, whether there is unit cohesion within the received script, wherein the unit cohesion indicates that a result value of executing the script with the one or more data points include units that match desired units, and determining, by the building management system, the result value by executing the script with the one or

more data points in response to determining that there is unit cohesion.

[0006] WO2020028981A1 Embodiments of the present disclosure disclose a method for remotely managing a cleaning quality for an indoor location being cleaned. The method includes accessing a training dataset including a plurality of plot points and associated signal strengths of a predefined signal received from a fixed network device, where at least one plot point is preselected based on a predefined cleaning attribute associated with a physical spot corresponding to the at least one plot point; receiving the predefined signal at a position in the indoor location from the fixed network device, where the received signal has a second signal strength and the position is determined proximate to the plot point based on the second signal strength and each of the signal strengths; and calculating a cumulative duration spent at the determined position based on a predefined cleaning schedule to assess the cleaning quality for the physical spot.

[0007] CN112230968A The application provides a firmware updating method, a firmware updating device, a server and a computer readable storage medium, wherein a title containing a plurality of attribute items is defined in advance, and after the server obtains attribute information of a firmware data packet, a firmware updating notice is generated and loaded to the title for message distribution, wherein the title is any title belonging to a message queue. Therefore, when an update request generated based on a protobuf format and sent by the terminal equipment when monitoring that the title subscribed by the

terminal equipment has the message release is received, the server obtains the firmware data packet and sends the firmware data packet to the terminal equipment, so that the terminal equipment updates the firmware according to the received firmware data packet. In the scheme, the high-efficiency and high-expansibility management of the firmware data can be realized by adopting a predefined title and utilizing a protosun message format and a message queue.

[0008] EP3955229A3 Methods and systems, including computer programs encoded on computer storage media, for providing internet access through a control panel of an alarm system, the method including establishing, by a control panel of an alarm system in a property, a first connection to an alarm system monitoring server across a cellular network, determining that a known source of internet within the property is not available, in response to determining that the known source of internet within the property is not available, establishing, by the control panel, a second connection to the internet across the cellular network, providing internet access to one or more devices in the property through the second connection, determining that the known source of internet within the property is available, and in response to determining that the known source of internet within the property is available, terminating, by the control panel, the second connection.

[0009] Road workers risk their lives to construct a means of transport. Construction zones are already dangerous places. The proposed invention focuses on designing a framework of Artificial Intelligence to monitor the

surroundings of road construction sites. The invention integrates an aspect of (Internet of Things) IOT to send alert messages in cases of emergency.

[0010] Above information is presented as background information only to assist with an understanding of the present disclosure. No determination has been made, no assertion is made, and as to whether any of the above might be applicable as prior art with regard to the present invention.

[0011] In the view of the foregoing disadvantages inherent in the known of road safety construction systems now present in the prior art, the present invention provides an improved system. As such, the general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new and improved smart IoT and artificial intelligence techniques to monitor the road safety construction system that has all the advantages of the prior art and none of the disadvantages.

SUMMARY OF INVENTION

[0012] In the view of the foregoing disadvantages inherent in the known types of safety construction management systems now present in the prior art, the present invention provides an improved one. As such, the general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new and improved system to predict the onsite issues that may arise when workers are involved in road construction which has all the advantages of the prior art and none of the disadvantages.

[0013] The Main objective of the proposed invention is to design & implement

a framework of Artificial Intelligence to monitor the road construction for its safety. The management of road construction activities are achieved using (Internet of Things) IOT unit.

[0014] Yet another important aspect of the proposed invention is to design & implement a framework that will include a camera and observe the surroundings of the construction site. The Artificial Intelligence unit will look in to the data recorded on camera for any difficulties. The (Internet of Things) IOT unit will send alert messages to concerned person when triggered by Artificial Intelligence unit.

[0015] In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the various ways. 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.

[0016] 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 had to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.

BREIF DESCRIPTION OF DRAWINGS

[0017] 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:

Figure 1 illustrates the schematic view of Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System, according to the embodiment herein.

DETAILED DESCRIPTION OF INVENTION

[0018] In the following detailed description, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that the embodiments may be combined, or that other embodiments may be utilized and that structural and logical changes may be made without departing from the spirit and scope of the present invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is defined by the appended claims and their equivalents.

[0019] While the present invention is described herein by way of example using several embodiments and illustrative drawings, those skilled in the art will recognize that the invention is neither intended to be limited to the

embodiments of drawing or drawings described, nor 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 covers all modification/s, equivalents and alternatives falling within the spirit and scope of the present invention as defined by the appended claims. The headings are used for organizational purposes only and are not meant to limit the scope of the description or the claims. As used throughout this description, the word "may" be 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 "a" 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 any additional subject matter not recited, and is not intended to exclude any 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 are included in the specification solely for the purpose of providing a context for the present invention.

[0020] In this disclosure, whenever an element or a group of elements is preceded with the transitional phrase "comprising", it is understood that we also contemplate the same element or group of elements with transitional phrases "consisting essentially of, "consisting", "selected from the group consisting of", "including", or "is" preceding the recitation of the element or group of elements and vice versa.

[0021] Road and highway construction workers are crucial for ensuring roads are safe new lanes and exits are created and other transportation project are completed. Working in the midst of speeding traffic or at night's results in unfortunate accidents and fatalities. Being constantly aware of the surroundings will be an important step in practicing safety construction practices.

[0022] Road construction work zones are busy areas usually with several work activities taking place at the same time. The proposed invention focuses on analyzing the aspects of road construction safety using the techniques of Artificial Intelligence. The road construction activities are keenly monitored and send the information to concerned person through (Internet of Things)

IOT.

[0023] Reference will now be made in detail to the exemplary embodiment of the present disclosure. Before describing the detailed embodiments that are in accordance with the present disclosure, it should be observed that the embodiment resides primarily in combinations arrangement of the system according to an embodiment herein and as exemplified in FIG. 1

[0024] Figure 1 illustrates the schematic view of Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System 100. The proposed system 100 includes a road 101 which will be monitored continuously during its construction. The camera 102 of monitoring unit 103 will record all the information and sends it to Artificial Intelligence unit 104 which will analyze the data. The (Internet of Things) IOT unit 105 will be triggered by Artificial Intelligence unit 104 to inform the concerned persons in case any danger is predicted. The mobile phone 106 will receive the alert messages.

[0025] In the following description, for the purpose of explanation, numerous specific details are set forth in order to provide a thorough understanding of the arrangement of the system according to an embodiment herein. It will be apparent, however, to one skilled in the art that the present embodiment can be

WE CLAIM

1. Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System comprises of Artificial intelligence unit;

   IOT unit and

   Monitoring unit.

2. Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System, according to claim 1, includes an artificial intelligence unit, wherein the artificial intelligence unit will guide the road construction workers through alert mechanism.

3. Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System, according to claim 1, includes an IOT unit, wherein the IOT unit will alert the concerned officials at regular intervals.

4. Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System, according

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practiced without these specific details. In other instances, structures are shown in block diagram form only in order to avoid obscuring the present invention.

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to claim 1, includes a monitoring unit, wherein the monitoring unit will monitor the construction site and the workers continuously.

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ABSTRACT

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ARTIFICIAL INTELLIGENCE BASED TECHNIQUES INTEGRATED WITH INTERNET OF THINGS (IOT) FOR IMPLEMENTING SAFETY CONSTRUCTION MANAGEMENT SYSTEM

Artificial Intelligence based techniques integrated with Internet of Things (IOT) for implementing Safety Construction Management System is the proposed invention. The proposed invention focuses on implementing a framework of Artificial Intelligence for analyzing the safety in construction system. The invention also aims at integrating the aspects of (Internet of Things) IOT in order to inform the concerned persons when there are unfavourable situation.

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