Automated Vehicle Identification System to Prevent Traffic Using Iot Applications

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ABSTRACT--*Internet of things (IoT) is an developed technology which helps devices to stay connected in the current generation. Every smart device can transmit the information with each other with the help of Network. Internet is used anywhere from small mobiles till high end data servers. Security plays an important role in today's developing technology. The problem in Existing System an autonomous mobile vehicle needs to be developed to allow the vehicle to reach the desired destination using tracking. This System concentrates on the vehicle navigation only. In order to support Traffic Monitoring system proposed system is Implemented using Raspberry pi B+ and IOT (Internet of Things). In this method an active RFID tag based system is used to identifying running vehicles on roads and collecting their relevant data's. The design principle and the architecture of the proposed system are presented, including active electronic tags and reading devices (readers and antennas), the monitoring base station deployment, the two-layered network construction(traffic area and controller room), and the monitoring software. Finally, the effectiveness and efficiency of the system is analyzed. Vehicle Tracking System has advantages of high efficiency of reducing the traffic, very simple, reliability and lower cost. The system will have large applications in traffic IOT (Internet of Things) to support traffic monitoring, traffic scheduling, and special vehicle tracking.*
Keyword*s-- Raspberry pi B+, RFID tag and reader, Internet of Things, Vehicle Tracking, Wi-Fi, and GSM.*

I. INTRODUCTION

In recent years demand of private cars is getting urban traffic more and more crowded. As result traffic is becoming one of important problems in big cities in all over the world. Because of heavy traffic it leads accidents, huge waste of time, property damage and environmental pollution. The research work presents a novel intelligent traffic administration system, based on Internet of Things, which is featured by low cost, high scalability, high affinity, easy to upgrade, to replace classic approach for traffic management system and the proposed system can improve road traffic extremely. The Internet of Things is based on the Internet, network wireless sensing and recognize technologies to understand the intelligent recognition on the tagged traffic object, tracking, monitoring, managing and processed

automatically. It proposes an architecture that combine internet of things with agent technology into a single platform the technology handles effective communication and interfaces among a large number of multiplex highly distributed, and decentralized devices within the IoT.
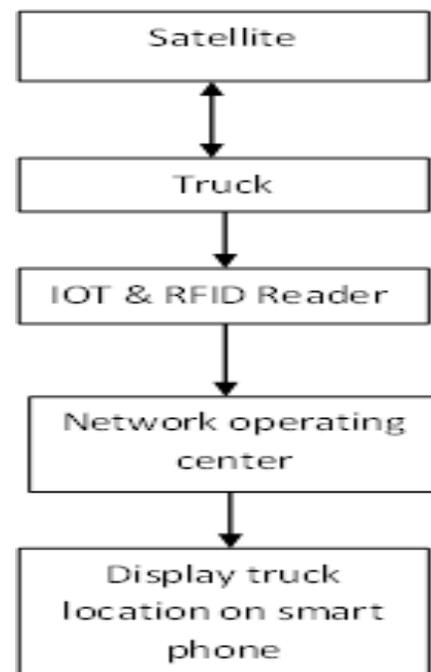

Fig1: Model Layout of Vehicle Tracking System

An automatic representation, tracking and queries over a tagged traffic objects is done by active wireless sensor technologies, radio-frequency identification (RFID), object ad-hoc networking, and Internet-based information systems. This research introduces to improve traffic conditions and relieve the traffic pressure. Using traffic IoT the information are collected and inform to travelers and other users. The system can observe current traffic operation, traffic flow conditions and also can predict the future traffic flow through collected real-time traffic data. The system may issue some latest real-time traffic information that helps drivers choosing excellent routes. Therefore, the system can correctly administrate, monitor and control moving vehicles.

II.   EXISTING SYSTEM

In Existing System an autonomous mobile vehicle needs to be developed to allow the vehicle to reach the desired destination using tracking. This System insists on the vehicle navigation. Radio Frequency Identification (RFID) technology is used to carried out the vehicle navigation. The system is used to navigate the vehicle from source to destination. The information is sent to the operator that can be navigates the vehicle through Global System for Mobile communication (GSM). The entire system is controlled by an efficient PIC microcontroller (16F877A).

A.DESCRIPTION

An autonomous mobile vehicle needs to be developed to allow the vehicle to attain the desired destination using tracking. Here RFID is used as navigating device which read the identity and send data to the vehicle operating person through the GSM. And LCD displaying unit used see the data which all things are interfaced with PIC controller. The entire system is controlled by an efficient PIC microcontroller (16F877A).

B.LIMITATIONS

- This System used for navigation purpose only.
- This type of system will create heavy traffic in the city.

III.   PROPOSED SYSTEM

To overcome the above system here Vehicle tracking system using RFID (Radio Frequency Identification) on IOT (Internet of Things) is implemented.   The concept of IOT Vehicle tracking system is a very innovative system which will help to prevent the heavy traffic in the city. In this system every vehicle in the city is monitored using RFID Reader and tag. Wifi modem is used for accessing and sending server data. If the vehicle struck in traffic the reader will read the tag id and send the data of vehicle details

to the control room. In control room they will send message to vehicle user to clear the vehicle. The entire system is controlled by Raspberry Pi B+.

A.WORKING PRINCIPLE OF THE PROPOSED SYSTEM

An autonomous mobile vehicle needs to be developed to allow the Vehicle tracking system is a very innovative system which will help to prevent the heavy traffic in the city. This system monitors the vehicle in city using RFID Reader and tag is proved to every vehicle. Wi-Fi modem for accessing and sending server data to control. If the vehicle struck in traffic the reader will read the tag id and send the data of vehicle details to the control room. In control room they will send message to vehicle user to clear the vehicle. The entire system is controlled by a Raspberry Pi B+.
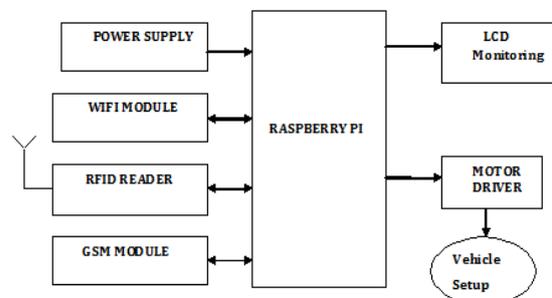

Fig2. Proposed Block Diagram

B. ADVANTAGES OF PROPOSED SYSTEM

- The System used to prevent the heavy traffic in the city.
- Wireless Communication is carried in the system.
- Efficient way of implementing the Smart city.
- Cost effective system.

IV.   SYSTEM ARCHITECTURE

To design a two-layer of network structures. LANs is the lower layer of device is that connect local devices, computers and users of a local Monitoring base station at each traffic intersection. The upper layer is Internet it supports long distance communication. They consist of a parts of an urban area traffic IOT. Local monitoring station can make request to the upper-level traffic management centre to check the information of a specific vehicle. The centre can collect real-time data from all monitoring base stations, to understand traffic flow status monitoring, traffic flow scheduling, unusual event detections, and illegal vehicles and special vehicle tracking.
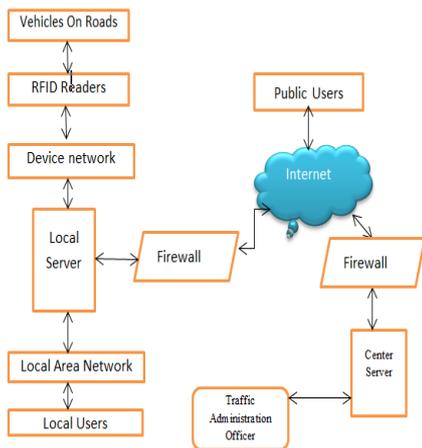
Fig3. System Architecture

The system consists of 4 sub-systems as follows:
- Overall Admin -User management sub-system
- Data collection subsystem
- Query and statistics updating sub-system
- Vehicle database management sub-system

V. SYSTEM IMPLEMENTATIONS

A.RFID READER AND TAG INSTALLTION

The basic RFID system, tags are attached to all items that are to be tracked. These tags are made from a tiny tag-chip, it is also called an integrated circuit (IC), the IC is connected to an antenna that can be built into many different kinds of tags including apparel hang tags, labels, and security tags, and also a wide range of industrial asset tags. The product's electronic product code (EPC) and other variable information is stored in the tag chip memory so the RFID readers can read and track information from anywhere.

The power, data and commands are sent through an antenna from an RFID reader which is a network connected device to the tags. The tags are made available to business application using an RFID reader which acts as an access point for RFID tagged items. It is used to track the vehicles in our system.

RFID READER

The tag data and enterprise system software that accesses the data are connected using an RFID reader or an interrogator. The reader uses an attached antenna to capture data from tags. The data is then passed to a computer for processing. There are various different types and sizes of RFID readers. The mobile devices are integrated with fixed readers that can be fixed in a stationary position in a store or factory. Readers are also

integrated with electronic equipment or devices, and in vehicles.

RFID TAG

An RFID tag consists of an integrated circuit is connected to an antenna that is printed, etched, stamped or vapor-deposited onto a mount which is frequently a paper substrate or PolyEthylene Therephtalate (PET). The chip and antenna pair is an inlay, it is then inserted between a printed label and its paste backing or inserted into a more strong structure.

TYPES OF RFID SYSTEM

Table I.   RFID System Types

	ACTIVE RFID	PASSIVE RFID
Tag Power Source	Internal to tag	Energy transfer from the reader via RF
Tag Battery-operated	Yes	No
Tag Power	Continuous	Only within field of reader
Reader to Tag Signal Strength	Very Low	Very high (must power the tag)
Available Signal Strength from Tag to Reader	High	Very Low
Communication Range	Long Range (100m or more)	Short range (up to 10m)
Sensor Capability	Ability to continuously monitor and record sensor input	Ability to read and transfer sensor values only when tag is powered by reader

B.GSM MODULE INSTALLATION

Raspberry Pi it is a high end embedded device, so an interface with a GSM modem will results in the invention of an intelligent system. As the Raspberry Pi discovers its own applications in image, video and audio processing, in the modem interface could progress a new path in the field of home automation, surveillance etc. The details of how to interface a GSM/GPRS TTL UART Modem-SIM900A with Raspberry Pi2 and to send and receive message through it.

C.WIFI MODULE INSTALLTION

USB WiFi adapter is plug into one of the free USB ports on the Raspberry Pi. Power up the Raspberry Pi – remind at this point the WiFi adapter does not work yet. The Raspberry Pi is

controlled either via a keyboard or remotely using a wired network connection. Want to make sure that the Raspberry Pi found your new wireless adapter after booting and logging-in.

D.VEHICLE SETUP MODULE

The design of gear motor is a specific type of electrical motor to produce high torque while maintaining a low horsepower, or low speed, motor output. In many different applications gear motors are used, and are probably used in many devices in your home .Gear motors are usually used in devices such as can openers, garage door openers, washing machine time control knobs and even electric alarm clocks. The gear motors are used commercial applications like hospital beds, commercial jacks, cranes and many other applications that are too many to list. Gear motors are used to reduce speed in a series of gears, which in turn creates more torque. Gears or a gear box being attached to the main motor rotor and shaft via a second reduction shaft these are accomplished by an integrated series. The second shaft is then connected to the series of gears or gearbox to create a series of reduction gears. It says about longer the train of reduction gears, the lower the output of the end, or final, gear will be.

Fig 4. Vehicle setup

Fig 5 .Working module of Vehicle tracking system

Table II. Resuled Data

SL. NO	VEHICLE NO	PERSON NAME	REGION	MOBILE NO	MESSAGE
01	TN38AB5523	PERSON_1	HOPE COLLEGE	9876512345	YOUR VEHICLE PARKED IN UNPARKING AREA MOVE FROM THAT PLACE
02	TN66CC2323	PERSON_2	GANDHI PURAM	7354319823	TAKE VEHICLE FROM UNPARKING AREA IMMEDIATELY

Fig 6.Working module of Web Page

VI.   CONCLUSION AND FUTURE WORK

Implementation of Smart Vehicle Tracking and Monitoring System using Internet of Things had been proposed. The proposed schemes very suitable for real time vehicle management. However, there are a number of issues to be addressed before the solution can be tested and applied to real-life problems such as heterogeneity of devices, concurrency of the services, responding times, data volume, human factors, and intelligence recommendations. In this work the above parameters are tested by using small modules the design aims to solve the issue of real-time monitoring road vehicles in traffic management. It overcomes the essential shortcomings of existing traffic management systems, and will compose of a fragment of traffic IOT to support a varied range of intelligent traffic management applications in the future. In future the same work can be made available in Smart device likes Tablet and mobiles so that it can be easily used anywhere. Sensor device need to be added they are alcohol and gas sensor to monitor the human activity and environmental changes and also need to add server connectivity for storage design purpose.

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