

Traffic Information Broadcasting For Smart Cities Based On Iot

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Abstract

The urban traffic is becoming crowded day by day because of number of private cars increasing .As result traffic is becoming one of important problems in big cities in all over the world. Traffic congestion and accidents are caused because of large number of vehicles running in any area.This creates problem for people they get stuck in traffic this causes a huge waste of time, property damage and environmental pollution. This paper presents aintelligent traffic administration system, based on Internet of Things, which is featured by low cost, high scalability, high compatibility, easy to upgrade, to replace traditional traffic management system and the proposed system can improve road traffic tremendously. The internet of factors is primarily based at the internet, wi-fi sensor network and detection technology to comprehend the wise popularity on the tagged site visitors automobiles, monitoring, monitoring, dealing with and processed mechanically. The paper presents an architecture that integrates net of factors with agent technology into a single platform in which the agent generation handles powerful communique inside the IoT. The architecture introduces the use of an lively radio-frequency identity (RFID),wireless sensor technology, item ad-hoc networking, and net-based totally records systems wherein tagged traffic gadgets can be routinely represented, tracked in the network.

Keywords—*Intelligent Traffic; Internet-of-Things; RFID; Wireless Sensor Networks; Agent Technology*

INTRODUCTION

During past few years recent communication paradigm -the internet of things - has gained extensive attention in academia as well as in enterprise as it represents an big possibility for fee financial savings and new sales technology throughout a wide variety of industries. The main reasons behind this interest are its talents. IoT can be used to create a global in which all smart items of our regular life are linked to the internet and engage with every other with minimal human involvement to reach a

commonplace intention. The term net of things became first seemed by using Kevin Ashton in the context of supply chain management. Gartner forecasts that the IOT will attain 26 billion units by way of 2020, up from 900 million just 5 years ago, and this could affect the statistics to be had to deliver chain leaders. in keeping with Cisco’s study, towns all around the world are to assert \$1.nine trillion in price from IoT over the following decade by way of building smarter towns based on smarter infrastructure, through imparting gold

standard site visitors management, parking, and transit offerings.

The technologies which can be predicted to form the sensing and communication technology in IoT are wi-fi Sensor Networks (WSN) and RFID-based networks connected collectively through the net or different technology. RFID is taken into consideration as one of the main technology because of its low price, and its in large part utilized in industries. RFID can remodel regular gadgets into smart gadgets. Sensor network integrates extraordinary technologies, which includes embedded computing and wireless communications. Sensors and RFID are plays a considerable position in building IOT.

Implementation of IOT relies on the combination of RFID systems, WSNs, and smart technologies. RFID and wireless data verbal exchange era are used to assemble a community. objects including RFID tags and readers, sensors, mobile phones, clever gadgets, embedded computer systems and so forth. can be included into the community and could interact with every other. these gadgets have processing, storing and networking capabilities. The advances in sensor technology, sensors could be embedded inside all the items round us. IOT permits people and numerous objects to be linked each time and anywhere with something and to any service, and use any network; and speak with every other in actual time as long as they're on-line.

other vital components encompass cloud, statistics modeling, storing, processing, and verbal exchange technologies . The principal wireless technology used to build

wi-fi sensor networks are wi-fi non-public location community (Bluetooth), wi-fi nearby vicinity community (wi-fi), wireless metropolitan location community (WiMAX), wireless huge region network (3G/4G cellular networks) and satellite network (GPS). a regular shape of a RFID primarily based sensor community is supplied in fig. 1. It consists of wi-fi low-quit RFID sensor nodes that generate statistics (tags) and excessive-give up RFID sensor nodes that retrieving facts from the low nodes. Facts amassed via the high nodes are sent to mobile static nodes (readers). Readers send the information to wireless low-stop computational gadgets (base stations). Those devices perform a certain quantity of processing at the sensor data. Then information sent to excessive-quit computational servers through the net (or other network) to be processed in addition and there facts will be shared and stored.

BLOCK DIAGRAM

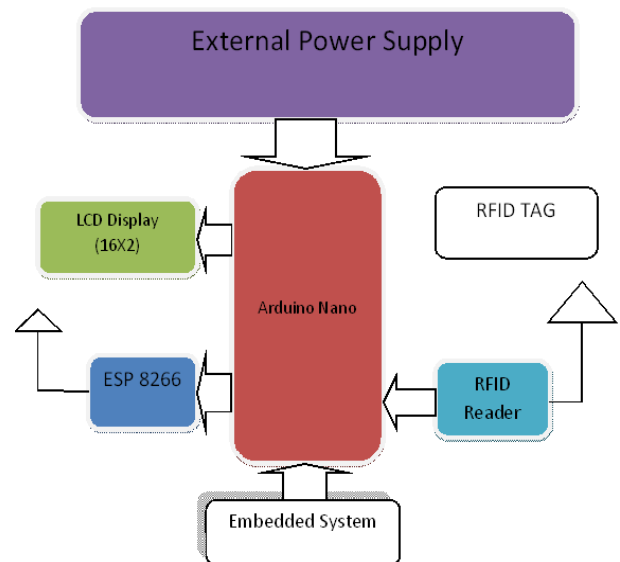


Fig1. Block diagram of traffic information broadcasting for smart cities based on IOT.

RF ID card

Radio-Frequency Identification (RFID) is the use of radio waves to read and capture information stored on a tag attached to an object. A tag can be read from up to several feet away and does not need to be within direct line-of-sight of the reader to be tracked. An RFID tag is comprised of a microchip containing identifying information and an antenna that transmits this data wirelessly to a reader



Fig2. RFID card

RF ID card reader

RFID Readers placed at entrances that require a person to pass their proximity card (RF tag) to be "read" before the access can be made.

. In every RFID system the transponder Tags contain information. This information can be as little as a single binary bit, or be a large array of bits representing such things as an identity code, personal medical information, or literally any type of information that can be stored in digital binary format.

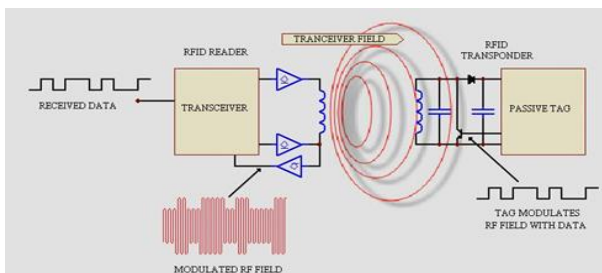


Fig3.RFID card reading process

Fig 3 Shown is a RFID transceiver that communicates with a passive Tag. Passive tags have no power source from the incident electromagnetic field. Commonly the heart of each tag is a microchip. When the Tag enters the generated RF field it is able to draw enough power from the field to access its internal memory and transmit its stored information. When the transponder Tag draws power in this way the resultant interaction of the RF fields causes the voltage at the transceiver antenna to drop in value. This effect is utilized by the Tag to communicate its information to the reader. The Tag is able to control the amount of power drawn from the field and by doing so it can modulate the voltage sensed at the Transceiver according to the bit pattern it wishes to transmit.

Arduino Nano

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328P (Arduino Nano 3.x). It has more or less the same functionality of the ArduinoDuemilanove, but in a different package. It lacks only a DC power jack, and works with a Mini-B USB cable instead of a standard one.

Getting Started

You can find in the Getting Started section all the information you need to configure your board, use the Arduino Software (IDE), and start tinker with coding and electronics.



Fig4.Arduino Nano

Technical Specification

Microcontroller	ATmega328P
Architecture	AVR
Operating Voltage	5 V
Flash Memory	32 KB of which 2 KB used by bootloader
SRAM	2 KB
Clock Speed	16 MHz
Analog I/O Pins	8
EEPROM	1 KB
DC Current per I/O Pins	40 mA (I/O Pins)
Input Voltage	7-12 V
Digital I/O Pins	22
PWM Output	6
Power Consumption	VII A

ADVANTAGES

- Proposed a novel traffic system that is capable of monitoring and managing urban traffic.
- The interface of client application is intuitive and it is easy and safe to use while driving. Also, here we can dynamically manage traffic signal depending on traffic density.
- This system is scalable.
- The additional vehicle spotting feature makes this system different from the other implementation.
- The incorporation of IoT into the system makes this as a blend of standard and advanced technologies.
- Vehicle owners can track their vehicle from anywhere in the world.
- The compact design makes the system more reliable, accurate and cost-effective.

APPLICATIONS

- Real-time traffic flow and congestion alerts
- Closed loop traffic management with real-time integration to operational systems

- Google Maps and Google Earth visualization
- Real-time Travel Time
- Live congestion detection using a variety of available sensor data
- Real-time access and updates for travellers
- Real-time visualization of traffic flow and congestion

CONCLUSIONS

This project presents a real-time traffic information collection and monitoring system architecture to solve the problem of real-time monitoring and controlling road vehicles. The proposed architecture employs key technologies: Internet of Things, RFID, wireless sensor network (WSN), Agents provide an effective mechanism for communication amongst networked heterogeneous devices within the traffic information system.

However the proposed traffic system based at the IOT includes a large range of RFIDs and sensors that transmit statistics wirelessly. This calls for improved protection to defend such massive amounts of data and privacy of users. It's a task for destiny studies to ensure the security of

clever items inside the site visitors tracking control gadget in case of a cyber- attack or an intentional hobby to a member of the IOT infrastructure. IOT requires modification of community connectivity models and readiness for huge boom in quantity of real-time records. To acquire that, interaction communication fashions should be redesigned to include device to machine and those to system communications. any other studies vicinity is processing and analytics of big volumes of disparate records from visitors IOT system to create packages that improve the glide of automobiles at some point of the metropolis.

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