Review on Transportational Tracking System

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Abstract: In this highly technological world, there is still the problem of inefficient transportation system. Several methods are being introduced to put a hiatus to people from waiting to take road transportation. In this paper, we have brought in concepts referred to the previous works on transportation tracking systems. The objective of these tracking systems is to manage the transportation efficiently. Some of the technologies mentioned in this paper are GPS(Global Positioning System), GSM (Global System for Mobile Communication), GPRS(General Packet Radio Service), RFID (Radio Frequency identification), IOT(Internet of Things), and Cloud. The alerting systems with tracking facilities provide information about the vehicle to the passengers. Various technologies that find its use in the transportation tracking systems have been discussed in this paper.

Keywords: GPS, GSM, GPRS, IOT, RFID, Cloud, Android

1. INTRODUCTION

The most important infrastructure for any country is its transport system. The major problem encountered during transportation is uncertain waiting time caused by the prevailing traffic constraints and any other issue due to abnormal circumstances.

Different tracking techniques such as Google maps, real time location and arrival time prediction are deployed. GSM or GPRS are used for sending information, GSM has wider applications as compared to GPRS. GSM is used for providing information to the user about the exact location of the vehicle. RFID, can be used in many identification systems that can improve the overall monitoring performance.

2. LITERATURE SURVEY

(A) GSM And GPS Based Tracking System

This system facilitates easy navigation of public road transport vehicles. It enables the control of vehicle transportation like taxis, buses, etc. This system holds "On- board module" which is placed in a vehicle that is to be tracked. This on-board module includes Global Positioning System (GPS) to track the vehicle, GSM modem that receives the location information and ARM processor to transmit the message. GPS establish the location

information and is resolved by the GPS receiver. The longitude and latitude information of vehicle coordinates are computed by the GPS and then the GSM communication controller transmits this information as a short message. This message is sent to the monitoring center through the GSM network [1].

(B) Design and Development Of GPS-GSM Based Tracking System With Google Map Based Monitoring

Tracking systems consist of a GPS system to track the subject, and a GSM system to receive the information relating to the location. The GPS receives the longitude and latitude location from the satellite. This system provides a number of social positives like for monitoring vehicle smugglings and look over personnel location in hectic times such as accidents. It holds a microcontroller which is used for transmitting a message. GSM promotes a two way communication process (client and server) and uses only one GPS device. GSM modems contain a SIM card which works analogous to how a mobile phone does [2].

(C) GSM and GPS Based Vehicle Location and Tracking System

In this developing world, incorporation of vehicle tracking system in a prerequisite for efficient transport. It is used for tracking college bus by using a mobile phone. Information relating the apparent location of the bus could also be sent to the user in the SMS (Short Message Service) form. The main advantage of the system is, the total absence of any need for internet connections or any kind of external server. In a microcontroller, the location, name, GPS coordinate values are stored as a Look Up Table (LUT). According to the market analyses basis, the previously used tracking systems are more expensive as compared to this system [3].

(D) How Long to Wait? Predicting Bus arrival Time with Mobile Phone Based Participatory Sensing

Most countries do not have the ability to predict the ETA of their public transport buses. It serves as a big negative point when people need to wait for a long time. To make the travelers feel more comfortable, this system is designed to predict the arrival time of a bus with the help of bus passengers participatory sensing. Instead of referring to GPS enabled location information, this system uses mobile phones. With mobile phones, the bus passengers also with the surrounding external information is collected and is used to locate the bus traveling routes and predict bus arrival time at various bus stops [4].

(E) Analysis of Bus Tracking System Using GPS on Smart Phones

Public transport systems have a downside as the traveler is unaware of the duration of the entire journey. Both infrequent users and regular users face the same situation. GPS is used for tracking the bus. On trip navigation information system will be provided by this system. More information can be retrieved about this on trip navigation information system. It uses the sensor to predict the areas. Use of this system helps the users in their choice of the bus for transport. Transit information system is created for providing information to the regular travellers and new travellers to have a good journey. Location based services are enabled for mobile devices like smart phones. They are used by remote users and for other tracking users [5].

(F) Implementation of Real Time bus Monitoring and Passenger Information System

There is a mess up in our day to day life relating to transports at high costs. Their work span is affected due to problems in transportation systems, such as traffic congestion, unexpected delays, and randomness in passenger demand, irregular vehicle dispatching times, and incidents. Researchers have developed a real time setting that provides a solution to the above problem. It mainly focuses on real time Passenger Information system (RTPI), providing areal timelocation of the bus with the help of GPS for getting information on the exact location of the

bus. The GPS obtains the data of location of the bus and transfer it to the centralized control unit which there by will represent the geographic route map positions [6].

(G) Bus tracking and Transportation safety Using Internet of Things

In India, there is an increased population with a no proper bus transportation system to facilitate the population. This leads to crowding at many public stops. For solving this problem, a smart design of IOT system is proposed. There is no smart city bus transportation system in India. There is a need to provide information as matters like number of vacancies in the buses which can provide even better information to the people despite their arrival and waiting. The destination is known with the real time of bus reaching. This helps in ensuring a safe journey and avoids crowding [7].

(H) RFID Based Tracking System

This paper deals mainly with the tree tracking system using RFID generally called as the Tree RFID Tracking System (TRTS). This system is used for the identification of distinction of variety of species and logging of trees in the forest. This TRTS system contains passive a RFID tag known as the static tag which is fixed in the trees. Each tree is given a unique id to be distinguished from other trees. The forest officers are provided with a hand held reader known as the moving device. The hand held reader is embedded with a circular polarization antenna. A 3G communication is established between passive tag and the hand held device. The technology used in this paper is (UART) Universal Asynchronous Receiver Transmitter for Serial communication between the transmitter and receiver, Zigbee is a WIFI device which is used for the transmitting the information [8].

(I) RFID Based Security and access control System using Arduino with GSM Module

This paper is based on the RFID system that is reliable and ensures quick response for the industries and companies in the real world. PIR and LPG sensor are used when there is a leak in an industry. RFID is cheap and easily available for convenient usage and research purposes. The RFID along with the ARDUINO is coupled in this system. ARDUINO allows easier understanding to gain knowledge in the circuit and programming sector. The main aim is the security access using RFID and ARDUINO with GSM. The technology used here is PIR sensor for detecting the materials or object which are in motion. LPG sensor is used for the detection of gas leakage [9].

(J) RFID-Based location Tracking System using a Peer-To-Peer Network Architecture.

In recent years, tracking plays an important role both in indoor and outdoor environments. Tracking in the outdoor system takes place with the help of GPS (Global Positioning System). Where as indoor tracking is done with RFID (Radio Frequency Identification). In this paper, tracking systems based on the RFID along with peer-to-peer (p2p) network architecture are discussed. This can provide cost effectiveness and flexibility for maintenance. The purpose of this system is to build a good Customer Relationship Management (CRM). The main methodologies used here are RFID and Zigbee. The peer to peer network is desirable solution since it is based on the distributed network that can operate through collaboration of networks. It makes the RFID systems efficient and practical [10].

(K) Design of a RFID Case-Based resource Management System for Warehouse Operations

Experts have devised various date operations with select resources in recent years. RFID based resource management is one such. It helps the user to select the resource usage packages that are more suitable for them to handle the ware house operations by analyzing useful knowledge from the case-based data ware house. The system saves time and is also cost effective. The branch and bound algorithm under a pure integral linear programming model defines the optimum travel distance embedded in this paper. The technology used in this

system is Radio Frequency Identification (RFID), case-based reasoning (CBR) technologies and the programming model for forklift route optimization [11].

(L) IOT Based Smart Bus Tracking System

Rather than preferring GPS enabled location information, we can generally adopt the available and energy efficient sensing resources such as audio recording and cell tower signals, movement updates etc., A system prototype is developed with different types of android mobile based application. The EEPROM is generally used for storing previous navigation locations. In addition, it can store upto 256 locations. The size of the kit is reduced by embedding both the GSM and GPS into a single module. The use of high sensitivity detection can help in bringing down the number of accidents. When the vehicle unexpectedly meets up with an accident, the high sensing detector sends the location information to the family members, police station and hospital [12].

(M) Cloud Computing Based Vehicle Tracking Information Systems

Satellite communication has become the order of the day for getting information on location. This tracking system makes things easier for the user in their day to day life. Systems like GPS are attached to vehicles like cars, ambulances and police vehicles became an important factor in most of the cities. The previously used tracking system reveals only information on the location and status of the vehicle. This system implemented with using centralized web service and cloud service. It is an embedded system which attached is with a sensor. GPS devices are used for tracking the position. Centralized server is created in which all the information about the location is stored. The technologies used here are Client Server and cloud storage [13].

(N) Cloud-Based Real-Time Location Tracking And Messaging System

Cloud computing technology is used in this system and provides a Server based computing system. Along with mobile technology smart phones became the trend today. It consist of GPS enabled function Wi-Fi and other well developed technologies. It includes more cloud computing services like online data storage push messages, data base processing. In this, technologies used are CRLTMS (Cloud based Real Time Messaging System) which provides the real time location of a bus, and the information is sent to the user by messages. The CRLTMS includes cloud based push messaging services like Google cloud messaging database and GPS to track the position [14].

(O) Vehicle Tracking And Locking System Based On GSM and GPS

There are chances of vehicle being stolen and owners are put to considerable loss. The security of the vehicles is highly necessary for the users. This system enables tracking vehicles and log based systems enabled in the vehicle to track locations and locking engine motor. It includes GPS and GSM to track location and to monitor the vehicle that is mobile and the status is updated. A missing vehicle sends a message to the microcontroller which provides the control signal to lock the engine motor. The vehicle stops automatically when the signals are received. A password previously set by the user is required to restart the vehicle. The technologies used are GPS, GSM locking system microcontroller [15].

(P) Regulating Bus Management System Using Cloud Platform

There is a heavy demand for more facilitative transport facilities in India. The public transports, mainly buses, are getting crowded day by day. People are unable to reach their destinations in a proper time. The buses get lined up at one time or none of the buses are available. Hence in this paper a system is proposed in which the number of passengers in a bus stop can be estimated and the bus services are provided according to the passenger arrival. The cloud platform is the best for implementing this scenario. The storage of cloud is dynamic and the

interfacing can be easily adopted using IAAS. In this paper allocation in cloud using Gossip protocol is majorly discussed [16].

3.   CONCLUSION

About 90% of India's population use public transport. A question arises as how to make a solid organized structure that is feasible for the transportation of the users. The integration and inter-operability of different kinds of transport networks seen in this document are the key features for the improvement of urban mobility. They also help provide travel information. The above discussed literature survey provides a description of the hardware and the software being used in the tracking system. Finally, the evaluations that shows improvement with satisfaction in public transit , reduces the waiting time, increases transit usage, encourages walking, and improves perception of safety among users and the riders.

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