IoT Cloud Device for Prevention Based Cellular sensor Data Processing

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ABSTRACT

The basic objective of this work is to examine the automobile tracking device and transmit the alarming situations in internet of things (IoT) principally based car tracking devices. Connecting the physical world to the internet through sensors and broadcasting devices is the goal of the Internet of Things (IoT). tracking of moving vehicles. Accidents involving motorised vehicles are often caused by sudden traffic slowdowns, especially on roads and highways with limited visibility. It might be because of other injuries, art work in progress on the road, excessive motorised vehicles, and so on. There is a general solution to this issue, but regrettably, not all roads and highways are equipped with traffic sensors that communicate with drivers' mobile apps over the 4G network. In this work, we provide a potential solution to this problem by mounting mobile visitors sensors in 255fb4167996c4956836e74441cbd507 and/or private transportation and particular volunteer automobiles at the same time. To avoid accidents in this sort of situation, real-time analysis of enormous traffic data is essential. A cloud-based IoT device for monitoring and alerting websites built only on OpenGTS and MongoDB is the focus here. Additionally, our IoT Cloud device is very advantageous for the drivers of critical services like ambulances. Tests show our gadget has appropriate reaction times that drivers can get hold of alarm messages in a timely manner to avert potentially dangerous incidents.

Keywords:- IoT, Accident, Cloud, 4G and Framework

INTRODUCTION

Car accidents are usually caused by human mistake and unsafe driving habits.. Sensor technology has advanced to the point that self-using, connected, and independent motors are becoming more common. Direct or indirect interactions between vehicles, vehicles to infrastructure, and vehicles to infrastructure may be used to decrease accidents by exchanging sensor data from autos. Vehicle sensor era allows drivers to enhance their driving experience. This makes it possible for a network of roadside devices to issue warnings and precautions and communicate information about the availability of critical services in a fixed way. Drivers in remote places where roads aren't equipped

with visitors sensors may benefit from this information. One of the most common causes of vehicle accidents is a sudden halt in traffic, particularly on roads and highways with limited visibility. Injuries, painting-in-progress on the road, or driving on top of it might be to blame for it [1]-[5]. It's called the Internet of Things, and it's a network of physical gadgets, automobiles, household appliances, and other objects that have sensors, actuators, and network connection. the interconnectedness of everything In order to sell, share and propagate research tasks and results in the IoT area, especially sensor software in IoT, including clever transportation systems, family-domain smart eHealth/mHealth, wearable sensing and computing, untrained buildings, smart houses, and smart towns. Strategic studies roadmap proposed by the Cluster of EU research initiatives. According to this paper, we should consider a new dimension of information and communication creation that can be accessed at any time from anywhere and by anybody. Indeed, this is an extension and growth of the "any time, everywhere, in every scenario" discussion paradigm in the public soft statement [6]-9]. More than a dozen IoT-related initiatives in over 20 countries received funding is shown in figure 1.

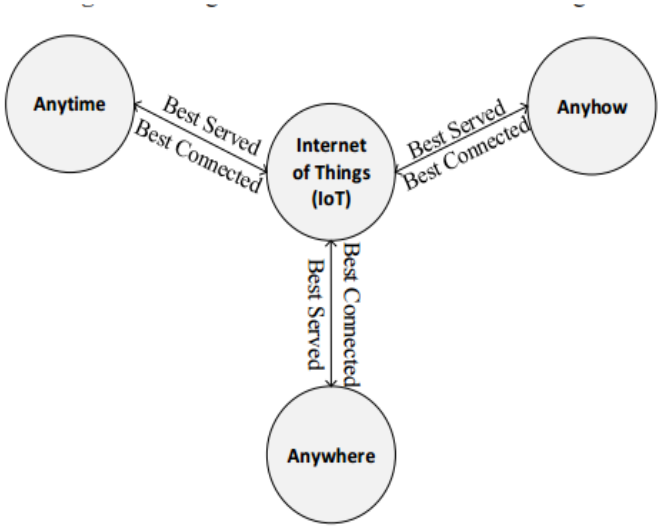


Figure.1. IoT

The use of IoT structures based on a company's and a business's specific needs may improve their competitiveness and service quality. IoT functions such as factory management, warehousing, distribution, transportation, logistics, advertising, and supply chain control must be paid separately of one other is shown in figure 2.

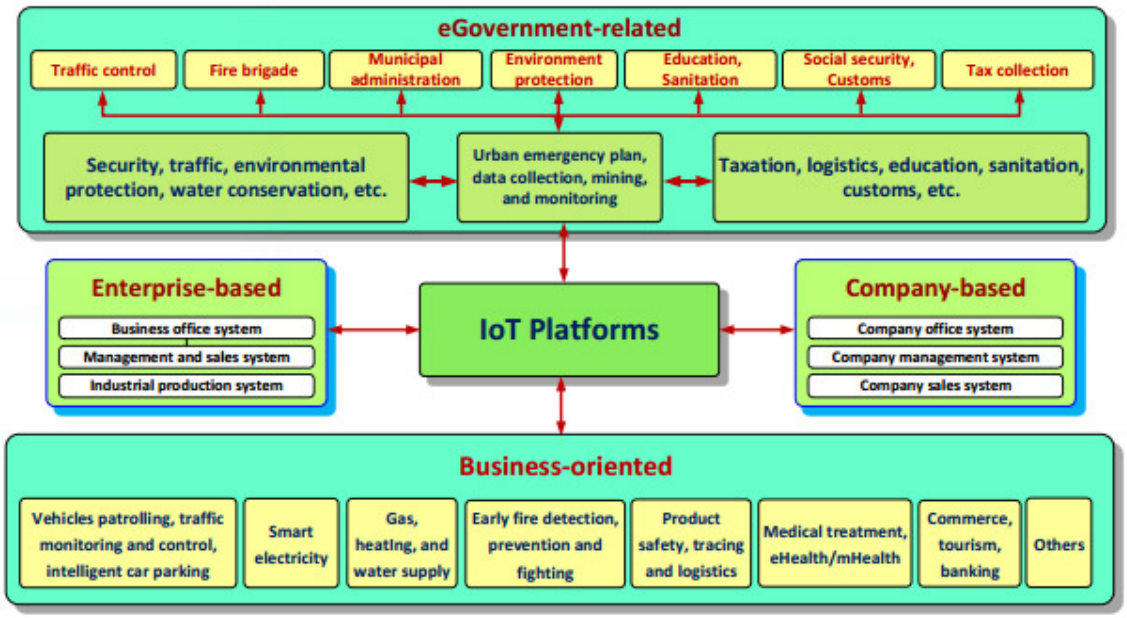


Figure.2. IoT Platforms

INTELLIGENCE TRANSPORTATION provider using VEHICULAR

CLOUD network

In today's world, transportation plays a crucial role and is the world's most important economic sector. When it comes to traffic accidents and human deaths, a rise of vehicles on the road might have a negative impact. A hybrid solution for traffic data and road safety is provided by the vehicular cloud community. In this study, we provide an overview of the vehicular cloud community and demonstrate how the proposed approach works using simulation results.

beam forming-based totally acoustic imaging for distance retrieval

Using beam formation, you may improve your distance structures to better find precise and large barriers. An acoustic imaging system capable of rebuilding impediment capabilities by targeting it with a particular array of sensors is introduced in this research.

VEHICULAR visitors Preventing accidents and traffic jams in the mining industry

The United States in 2013, 32,719 people were killed in automobile accidents. Almost 90 people are killed and more than 250 are wounded per hour on average each day. By reducing the number of traffic collisions, we can improve road safety. Crashing traffic also causes traffic jams, which have become unpleasant, especially in mega-cities. Decision makers and practitioners may use the aforementioned studies to implement new traffic laws and norms in order to reduce injuries and promote road safety.

Vehicular Adhocnetwork Performance Analysis Special Traffic Scenarios for Cloud Computing. Ad-hoc advertising for automobiles Smart automobiles on highways (VANETs) are combined to solve numerous transportation issues. Because of their dynamic design, VANETs have a wide range of variables that impact their performance.

IoT in related automobiles

According to an assessment, today's current environment requires intelligent mobility. IoT, cloud computing, and vehicle technology may all be used to create a smart transportation scenario. In this research, these challenges and concerns about linked cars are addressed. This article also highlights current research approaches for IoT in linked cars.

Connection results in a reduction in postponements.

Insufficient capacity

Connected cars, cloud computing, and the internet of things all provide unique integration problems for shrewd transportation systems. Our modern civilization relies heavily on transportation as a vital part of its infrastructure. People's mobility, commerce, and economic development all depend on transportation infrastructure's functioning. To promote better IoT solutions and the future of the net of things (IoT), it's difficult to monitor sports using so many unusual types of sensors. Big data, however, is a major problem because of the massive growth in the volume of heterogeneous facts that must be kept and processed. Data and communication systems are being rethought because of the rise of cloud computing and the internet of things (Iota). aIoT Cloud scenarios are examined in this study, where we look at field-based virtualization of smart devices. Cloud computing and the Internet of Things (IoT) are changing the way we think about data and communication architecture.

DEVICE ANALYSIS

Existing Machine

Using real-time traffic data is essential to the development of the vehicular real-time course-planning set of rules. Most traditional IT'S work relies on cellular structures or loop detectors to gather time-varying traffic-situation data. To gather real-time traffic data for forecasting or reconstruction in experimental research, mobile phones or cellular sensors with cell access were examined. Traffic management devices with loop detectors for non-stop traffic dimensions and monitoring along arterials are introduced. However, the software of cellular systems and loop detectors is shadowed by predicted limitations. Aside from the fact that they're no longer committed only to collecting traffic data, mobile systems may also cause congestion for other mobile services due to the high volume of traffic data they collect. The cost of deploying loop detectors might also be rather high. As a result,

short-distance transmissions, particularly in congested networks, will suffer from the fact that the location dimension is unreliable.

PROPOSED system

Studying car monitoring systems and discussing the difficulties of an internet of things (Iota)-based automotive monitoring system are at the heart of this work. Iota is a system for establishing a link between physical items by records sensing and transmission devices linked to the internet. evaluation: In this study, a thorough examination of the Iota and large-scale data analytics of vehicle monitoring systems is provided. The planned mango DB is used to monitor the area around vehicles. On the vehicles, sensors are installed to monitor the environment.

Concurrency control at the report level is implemented via Mongo DB's default Tiger storage engine, which supports two concurrent writers and native compression. Tiger rewrites the text rather than enforcing revisions in the immediate area. A write-ahead transaction log and checkpoints are used by wired Tiger to ensure data patience. Record data is written to disc 60 seconds after the previous checkpoint, whichever occurs first when using default.

It's a global positioning system (GPS): GPS is a gadget that provides information about the location and the time of day. Initially, they were utilised at the military's defence school, but they have now been widely available to everyone. The most crucial benefit of GPS is the ability to pinpoint the position of everything that has these gps devices. In order to acquire the position, it relies on four or more satellites. These are used to monitor the location of the automobile in the assignment. An IoT-enabled MANGO DB machine and PUBLIC CLOUD machine-based twist of fate alert and real-time car tracking device is proposed that tracks the vehicle and sends the monitoring facts (range and longitude) to the IoT cloud platform over the net wherein it shows the pin factor location on a map where the vehicle is met with an unexpected twist of fate.. Additional information is sent to the allowed individual in the form of range and longitude through SMS. Having the ability to play music in a vehicle's engine is a huge benefit for transportation and travel firms.

OPEN GTS

OpenGTS (Open source GPS monitoring device) is a net-based completely GPS tracking system for your fleet of vehicles.. Other map providers are supported, as well as detailed/precise reporting, as well as a wide variety of GPS tracking devices. One or more cars may be tracked and monitored at the same time with our OpenGTS GPS tracking solution. It is now possible to gather and store GPS tracking and Telemetry data from remote devices using OpenGTS, along with a wide range of other functionalities.

As a web-based authentication method, each account may be used by several users and each user has a unique login password.

Customizable web page decorations: The appearance and feel of the monitoring web site may be easily adjusted to match the theme of the unique company.

In addition to the legitimate support for Google and Microsoft virtual Earth, OpenGTS has Mapstraction support. OpenGTS can now display maps from OpenLayers, MultiMap, Map24, MapQuest, and many more thanks to Mapstraction. The OpenGTS framework makes it easy to integrate multiple mapping service providers with minimum effort.

In order to present the historical data of an individual vehicle or the whole fleet, detail and summary reports may be modified.

Custom geo-fenced territories (geo zones) may be set up to send arrival/departure notifications when people enter or leave. The 'address' shown on reviews when within the geo zone may also be named for each geo location (for example, "Phil's backyard").

It is possible to use OpenGTS with almost any GPS tracking device, even if it doesn't come with support for the Sanav, iCare, or OpenDMTPsuccessful ones. A single online interface may now be used to fine-tune a wide variety of distant hardware types.

OpenGTS itself is built entirely in Java, leveraging technologies such as Apache Tomcat for web service deployment and MySQL for the data store. It is operating system agnostic. If you have a device that supports these technologies, you can run OpenGTS on it (together with Linux, Mac OS X, home windows XP, home windows Vista, and more).

MODULES:

VLANs are formed, public loads are processed, open GTS is used, MongoDB is used, and visitors are alerted.

MODULES DESCRIPTION:

VANET community formation

Incorporating many types of sensors and adapters into a single device Cars equipped with GPS receivers may collect and transmit data about their own location and that of their immediate surroundings to other nearby vehicles.

It is possible to acquire and share real-time information about the status on the road network through the V2V (automobile to vehicle), V2I (vehicle to infrastructure) and P-V2P (car-to-pedestrian) interactions of the net of motors (IoV) is shown in figure 3.

Public load processing

In the event of an emergency, for example, a smart traffic item may be activated by the video display unit to respond to a few tag analysing events is shown in figure 4.

Open GTU technique

Traffic data from motor vehicles is supplied in real time to an OpenGTS server that stores it in a square database, allowing users to see real-time traffic patterns on OpenStreetMap. Connectivity data from VANET is inserted into the square records database. The database serves as a conduit between the public cloud and the IOT net server .'s As a result of this process, a real-time OpenStreetMap visualisation of traffic conditions is provided is shown in figure 5.

Mongo DB process

The data was gathered from mangodb records. mongoDB is a file-oriented, scalable, and general-purpose database that is remarkably effective, flexible, unrestricted, and open source. Secondary indexes, variety queries, sorting, aggregates, and geographic indexes may all be added to the system. It is a No square database since it uses JSON-like documents with schemas is shown in figure 6.

Site visitors alert

The initial set of regulations for course-making is intended to alleviate traffic congestion and keep visitors from behaving erratically in the community. can provide the guests with a selection of possible directions. ingenious traffic control Car sensors, ambient sensors, and visitor flow data are all stored in the traffic machine database. The methods of the subsystem collect data and exchange it with other subsystems through the interface. It allows for fast and accurate location tracking of a vehicle, as well as a more efficient scheduling of guests. in case of an emergency, it watches the system and takes a few actions in response to a few tag reading events on behalf of an intelligent visitor item is shown in figure 3. .

LANGUAGE SPECIFICATION: JAVA

SYSTEM DESIGN SYSTEM ARCHITECTURE:

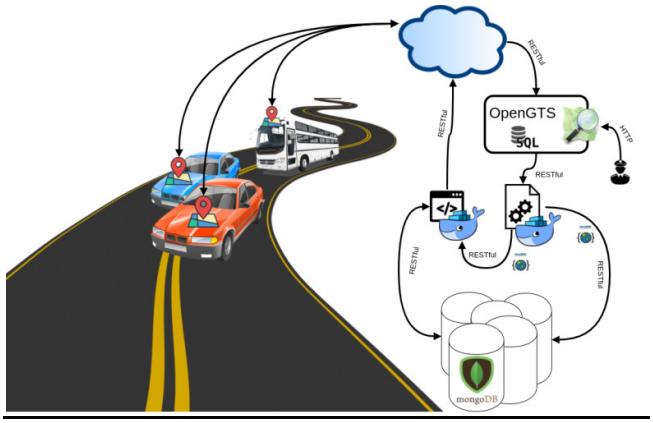
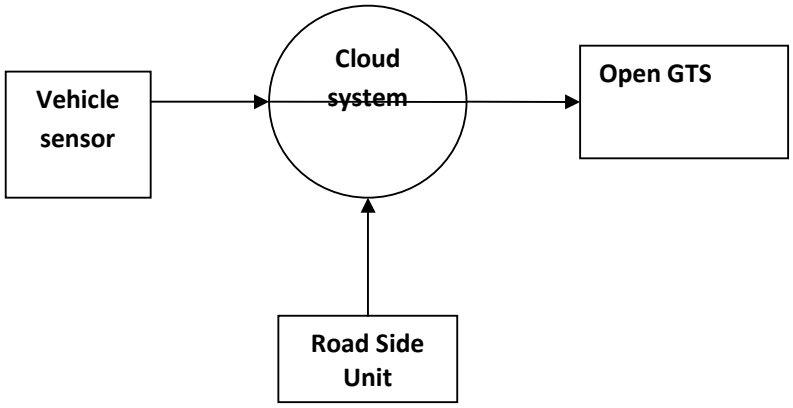


Figure.3. Java Architecture

DATA FLOW DIAGRAM:



LEVEL 1

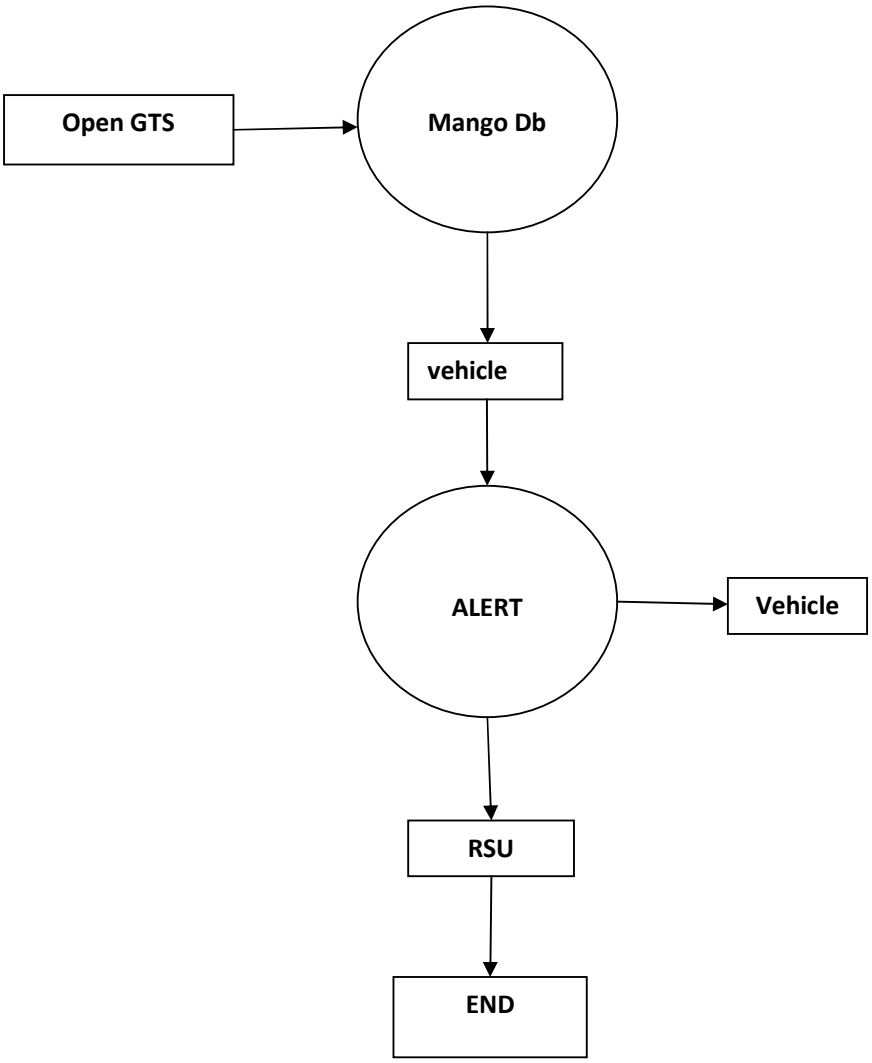


Figure.4. Data Flow Diagram

CLASS DIAGRAM:

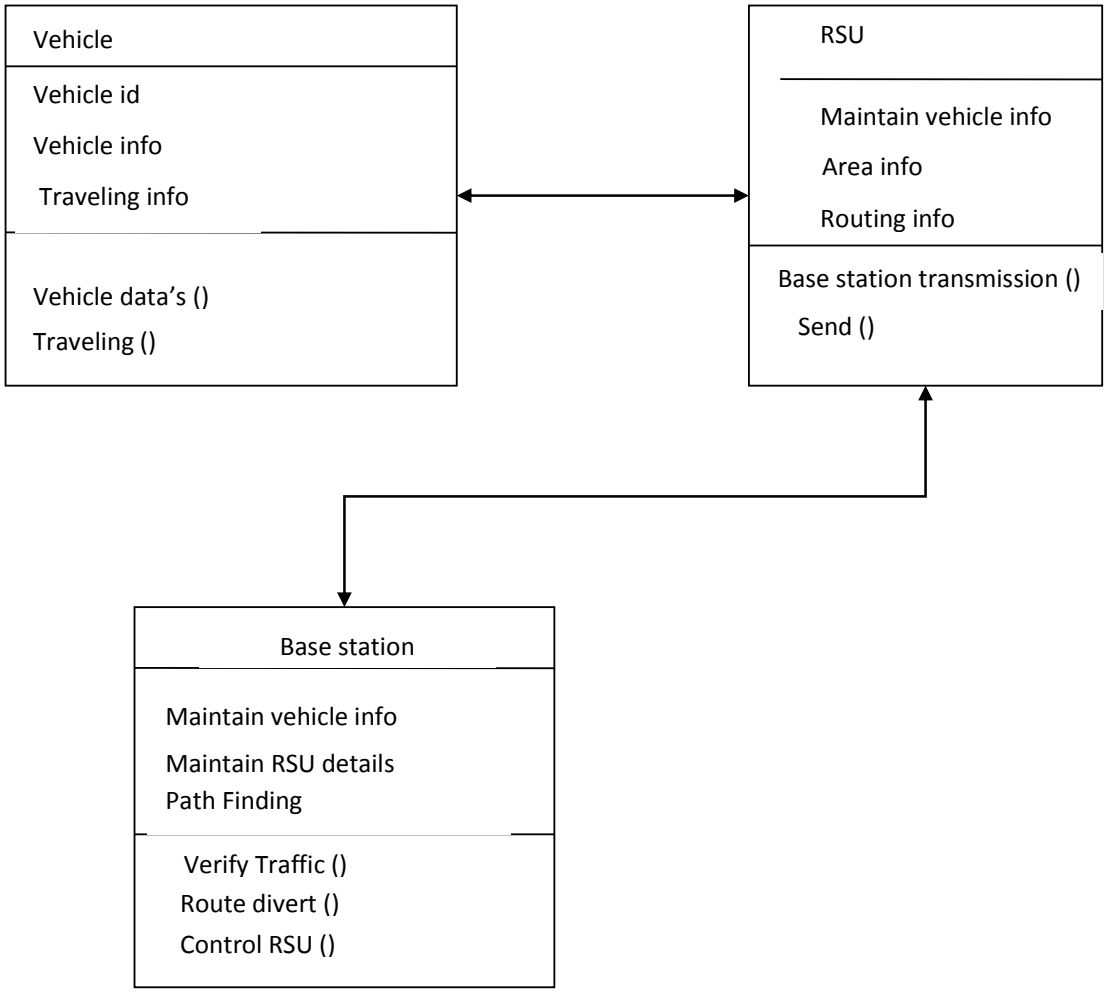


Figure.5. Class Diagram

SEQUENCE DIAGRAM:

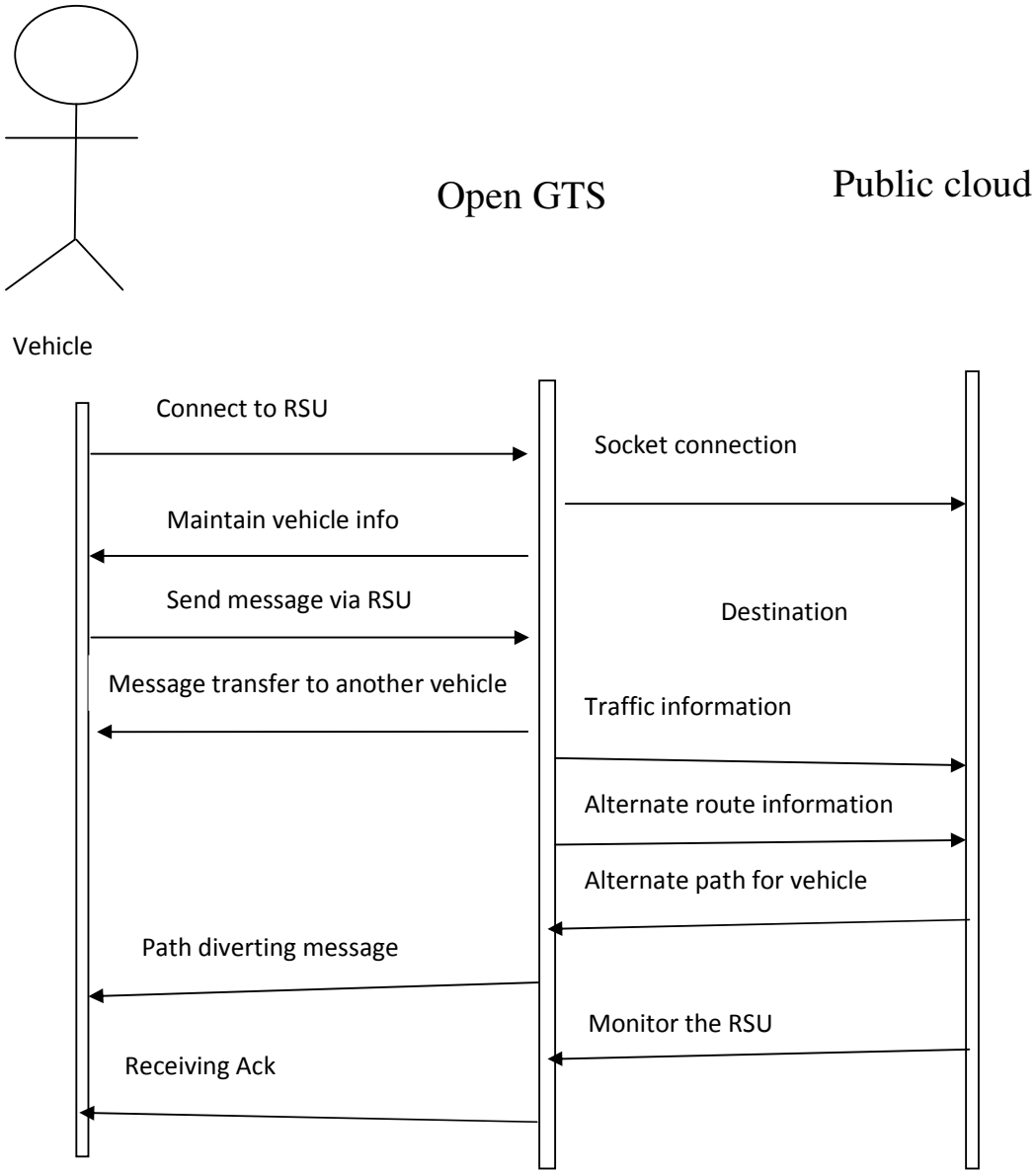


Figure.6. Sequence Diagram

ACTIVITY DIAGRAM:

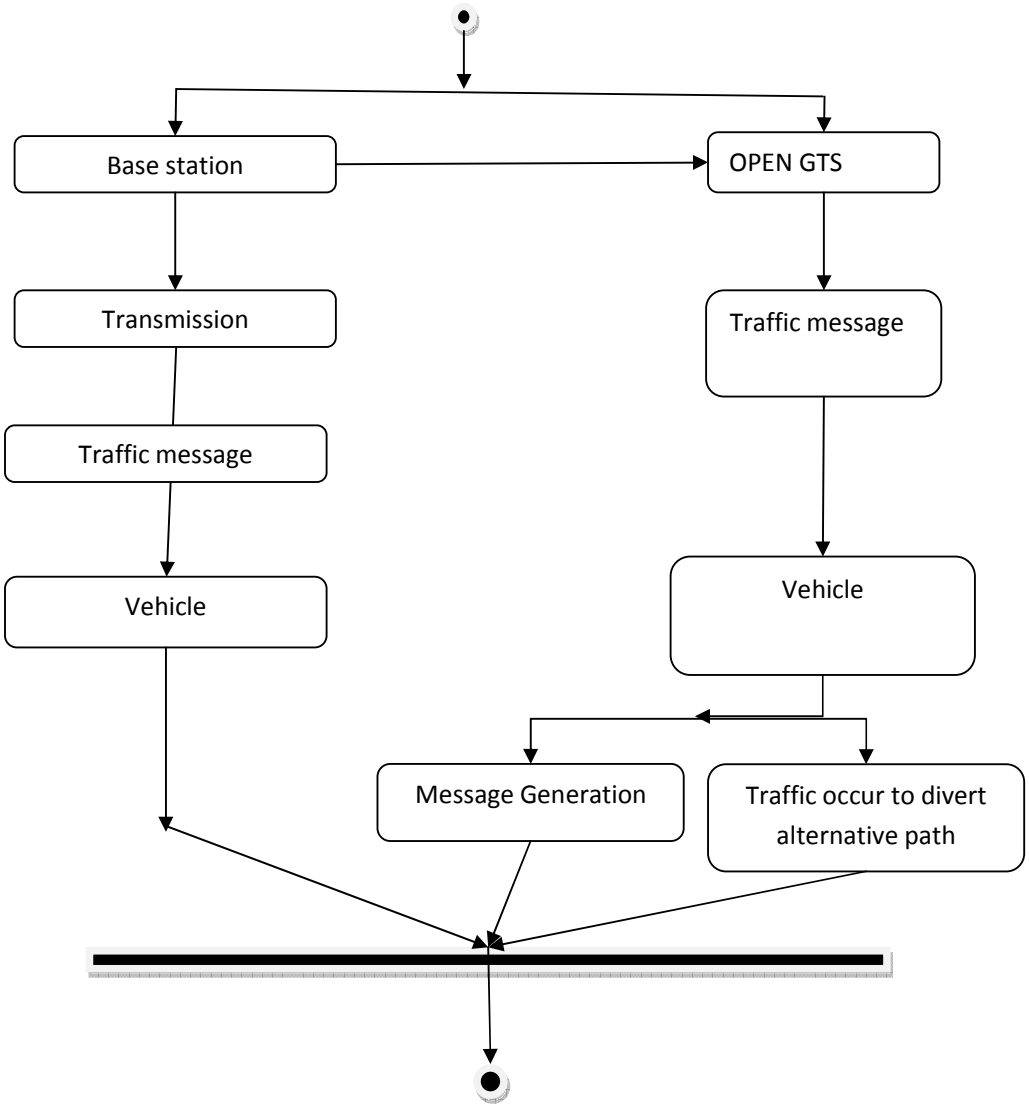


Figure.7. Activity Diagram

SYSTEM STUDY

FEASIBILITY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not

a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are

- Proposals are put up in this phase with a very broad strategy for the project and some cost estimates in mind. In order to determine whether or not the proposed system is viable, a feasibility study must be conducted. This is to guarantee that the planned system is not a burden to the business. A basic grasp of the system's primary needs is necessary for feasibility study.
- Feasibility study includes three major considerations:

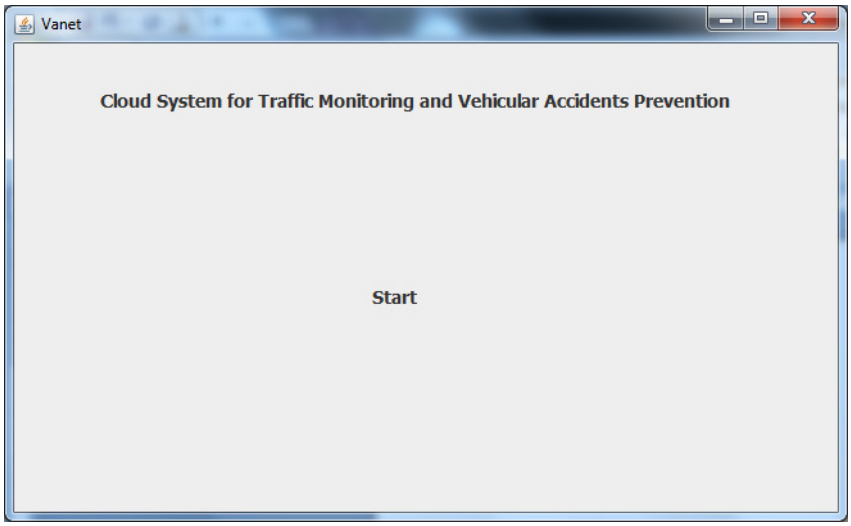
Unit testing

Internal programme logic and legitimate outputs are tested by creating test cases to ensure that all of the program's functions are working as expected. Validate all decision paths and internal code flow. It's the testing of the application's individual software parts. Before integration, it is performed after the completion of each individual unit. This is an intrusive structural test that depends on knowledge of the structure's architecture. At a component level, unit tests are designed to execute simple tests that focus on a single business process, application or system configuration. There are a number of ways to verify that a business process adheres to its written standards, including unit tests.

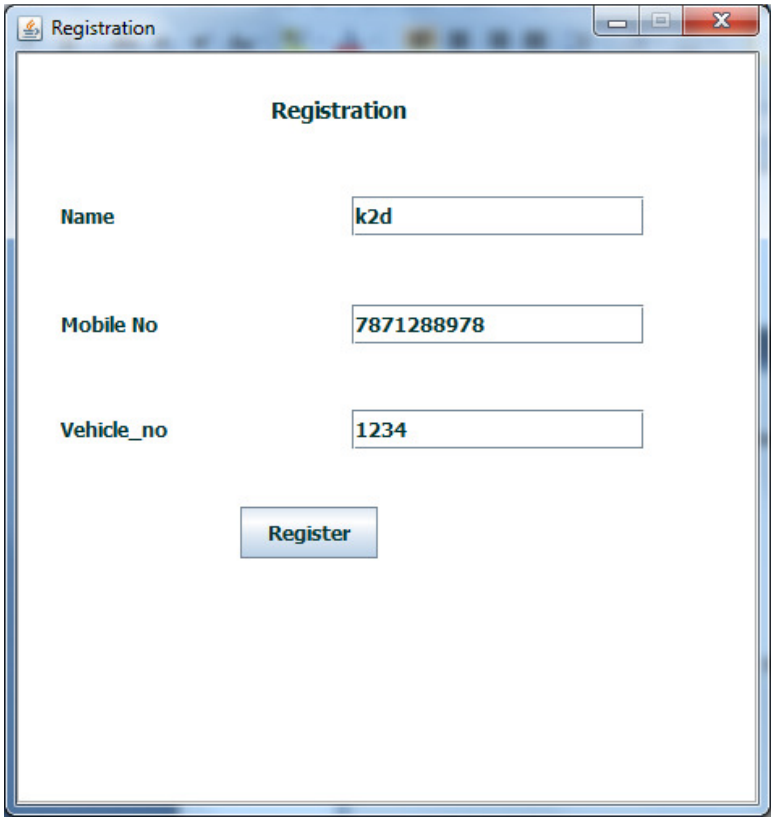
System Test

Testing the complete integrated software system guarantees that all the criteria are met. It ensures that a configuration is tested to verify that the outcomes are known and predictable. The configuration-oriented system integration test is an example of system testing. Pre-driven process connections and integration points are emphasised during system testing is shown in figure 8.

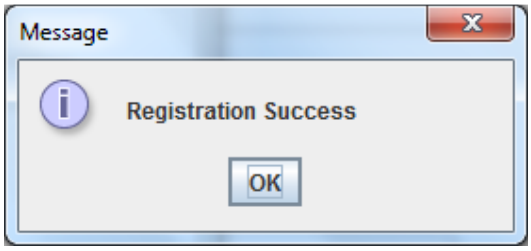
SYSTEM OUTPUT



(a)


Registration
Registration
Name
k2d
Mobile No
7871288978
Vehicle_no
1234
Register

(b)


Message
Registration Success
OK

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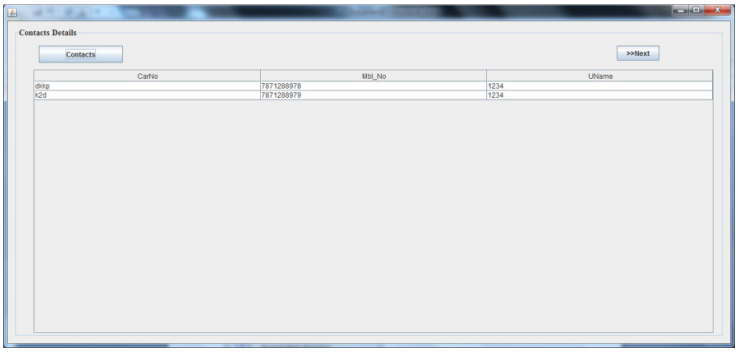
Contacts Details
Contacts
>>Next
CarNo
Mbl_No
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dklp
7871288978
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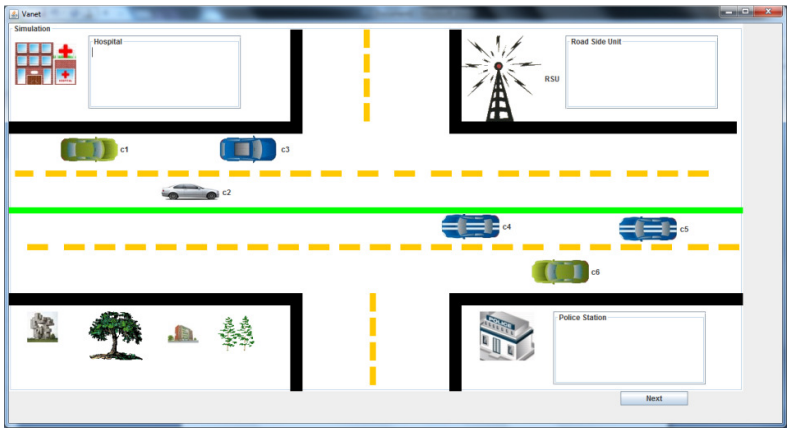
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Simulation
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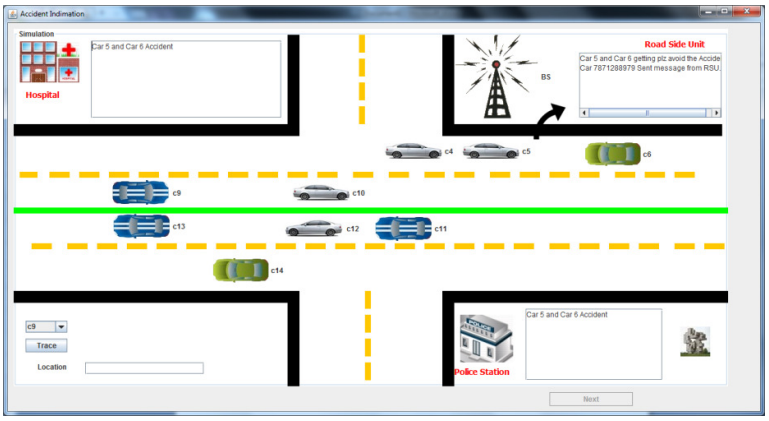
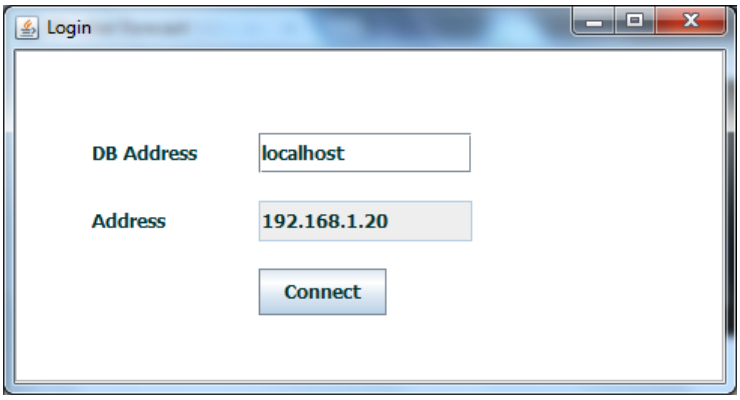
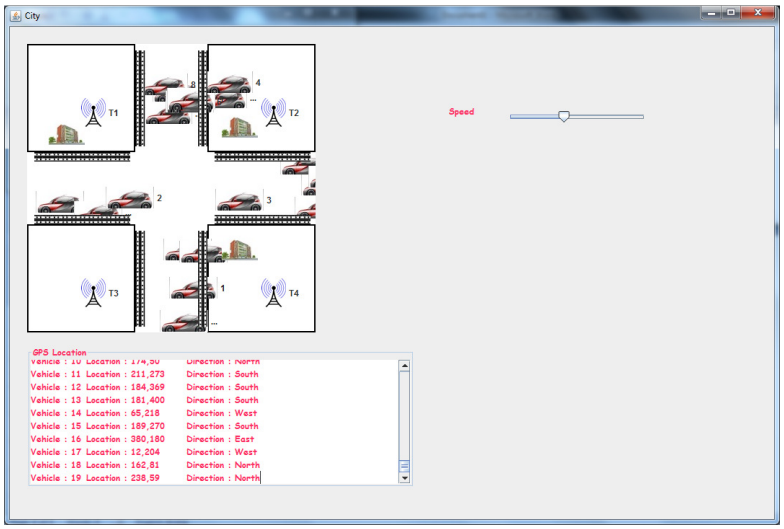
c6
Police Station
Next

(d)


Accident Indimation
Simulation
Car 5 and Car 6 Accident
Hospital
Road Side Unit
BS
Car 5 and Car 6 getting plz avoid the Accide
Car 7871288979 Sent message from RSU
c4
c5
c6
c9
c10
c13
c12
c11
c14
c9
Trace
Location
Car 5 and Car 6 Accident
Police Station
Next


Login
DB Address
localhost
Address
192.168.1.20
Connect

(e)



(f)

Figure.8. VANET Output

End:

A abrupt halt in traffic, especially on fast-moving roads and highways, may be very dangerous for drivers of automobiles. Even at the city's outskirts, not all roads are currently equipped with permanent traffic sensors. An Iota Cloud device for traffic monitoring and alarm notification was addressed in this study. Data from autos is sent to a server that stores it in the sq. database and provides real-time OpenStreetMap visualisation of the traffic situation. Unstructured geo-area data is sent to a Godson parsing micro service for additional processing[10-19].

a MongoDB distributed database to include you. You may use any other micro-ability carrier's to query how the positions of nearby automobiles change if you want your cell phone apps to get alerts about probable slowdowns caused by unexpected visits from neighbouring areas.

Conclusion

A 4G community connection is used to transport data. as a result, one may If you want to take advantage of the benefits of cloud-based virtualization, you'll need a scalable OpenGTS server and micro-offerings distributed through Docker bins. We ran a slew of tests to determine the insertion and retrieval speed of MongoDB while keeping in mind the well-documented delay of the 4G network. Acquired response cases demonstrate the viability of our approach in the real world. We activated our machine's security measures.

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