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# IoT based Vehicle Tracking System

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**Abstract:** *The **Internet of Things (IoT)** is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with*


*unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.*

*The definition of the Internet of Things has evolved due to the convergence of multiple technologies, real-time analytics , machine learning and embedded Traditional fields of ,wireless network ,controlling systems (including home and building infrastructure), and others all contribute to enabling the Internet of Things. In the consumer market, IoT technology is most synonymous with products pertaining to the concept of the "smart home", covering devices and appliances (such as lighting fixtures, thermostats, home security systems and cameras, and other home appliances) that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smartphones and smart systems.*

## 1. INTRODUCTION

In a nutshell, the Internet of Things is the concept of connecting any device (so long as it has an on/off switch) to the Internet and to other connected devices. The IoT is a giant network of connected things and people – all of which collect and share data about the way they are used and about the environment around them. That includes an extraordinary number of objects of all shapes and sizes – from smart microwaves, which automatically cook your food for the right length of time, to self-driving cars , whose complex sensors detect objects in their path, to wearable fitness devices that measure your heart rate and the number of steps you've taken that day, then use that information to suggest exercise plans tailored to you.

- **How does it work?**

Devices and objects with built in sensors are connected to a Internet of Things, which integrates data from the different devices and applies analytics to share the most valuable information with applications built to address specific needs.

These powerful IoT platforms can pinpoint exactly what

information is useful and what can safely be ignored. This information can be used to detect patterns, make recommendations, and detect possible problems before they occur.

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## 2. PROPOSED SYSTEM

Our system provides the relevant information regarding all the vehicles going from users source & destination along with the route details, real time location. Generally our system is operated by GPS which is attached with the vehicle. Firstly GPS receives the satellite signals and then the position co-ordinates with latitude and longitude are determined by it. The location is determined with the help of GPS and transmission mechanism. After receiving the data the tracking data can be transmitted using any wireless communications systems. A real time dashboard is been created showing the live location of the vehicle with help of google maps.

For creating these dashboards we have used the platform named Thingsboard which is an open source IOT Platform which allows the developer to create real time Dashboards which will show accurate and efficient monitoring of IOT devices

**What makes our System different than the others?**

There are many system that have been implemented regarding the vehicle tracking system which basically shows the location of the vehicle with co-ordinates ie.Longitude and Latitude

**Our system will show the following:-**

a) **Live Location of the vehicle using Google Maps.**
b) **Accurate speed at which the vehicle is travelling.**
c) **It will also check the fuel in the vehicle and show its exact reading**

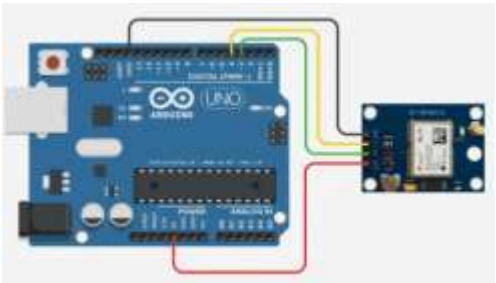
- Companies like Ola , Uber having such huge amount of database of the vehicles can use our system to efficiently monitor their business which will make the task of looking after the vehicle that is connected to the Internet Easier and also it will help in security purposes as it will not only show real time data but also the data from the past.

1. **Installing the Sensors And Microcontroller:-**
For our system we have used sensors and a microcontroller we have used Ardiuno UNO for programming and a Wi-Fi module to send data onto the dashboard

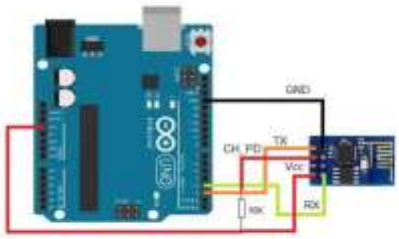
Following are the sensors;-

a. DHT 11(Temperature)
b. ESP 82366 module(Wi-Fi Module)
c. GPS Module
d. Speedometer
e. ARDIUNO UNO

2. **Connecting all the sensors to the Microcontroller:-**



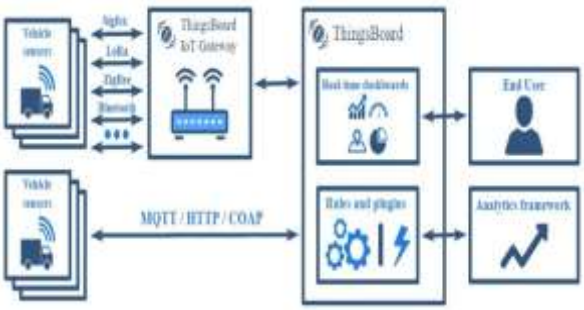
**a. Connecting Wi-Fi Module:-**




**b. Connecting Fuel Gauge Sensor:-**

3. **Pushing Data Collected By Ardiuno on Dashboard:-**

For pushing the data onto the Dashboard we have used HTTP server for sending the data that is represented on serial monitor of the Ardiuno onto the dashboard as shown in the fig below




There are preinstalled Plugins and Rules provided by things board for pushing data from the microcontroller onto the Things board by using those commands in the Ardiuno programming Module the data is then sent continuously showing live location of the vehicle and also the related data associated with it

4. **Data Visualization :-**

Once everything is set the user will login from Things board and will get the full data represented on the dashboard without any problem and can efficiently look after the data.

## 3. CONCLUSIONS

1. We have successfully developed and implemented a vehicle tracking system that gives feedback information of the location of stolen vehicle using GPS-GSM technology.
2. It is user friendly, easily installable, easily accessible and can be used for various other purposes.
3. It can also be applied for better management of fleet with a return of large profit, better scheduling or route planning to enable large job schedule.
4. We are still working on the possibility of improving on the system to give SMS feedback to the vehicle owner when an accident occurs.
5. This will help to reduce the delay in evacuation of accident victims to hospital and reduce the chances of losing life project is properly implemented it will improves safety, reduce vehicle loss due to theft, increase productivity, reduce diversion of routes by transport company's drivers.

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