

# International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

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Vol. 8, Issue 5, May 2019

## Automated Vehicle Id Verification and Tracking

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**ABSTRACT:** In the present world, there are many high tech appliances in our homes that make our life easier. To automate a machine, a secondary brain (another machine) is required to 'Think' and control machines to do tasks as per the convenience of the user from a distances. An automation system is proposed for the users to control home electronic appliances with high mobility and security. A set of switches will be controlled by internet with the use of a Raspberry pi micro-controller board. A Raspberry pi micro-controller board obtains user input from a website that is accessed through a user name and password. The customized user friendly website has several buttons to control the appliances. A Raspberry pi will be located in a room and will be connected to all electronic appliances in the home with the help of electromagnetic relays. The Raspberry pi can be controlled from any distant place with the help of weaved cloud service. Webiopi framework gives us a platform to interact with Raspberry pi's GPIO pins. The Raspberry pi then either passes or stops current through an electromagnetic relay connected to the intended switch and this closes or opens the circuit that allows the appliance to turn on or get switched off. Thus automation of electronic appliances can be made possible with the use of a Raspberry Pi board with the help of internet connection and relay switches.

**KEYWORDS:** Automation, Raspberry pi, Weaved services

### I. INTRODUCTION

In the present age, technology has become an major part of each individuals daily life. All of us are busy with work and has no time to spent for anything. So automation influences everyone to save their valuable time. To automate objects refers to the idea of devices and appliances working by themselves acting upon the command by the user.

Pooja More and D. G. Harkut have proposed a model[1] for data security using a constant size cipher key based cryptosystem that uses CP-ABE scheme with attribute based aggregate key. In this cryptosystem, to access the data stored over cloud, an aggregate key is shared based on the attributes of a user. Data owner shares an aggregate key only to those users whose attributes gets matched with the security policy to access the data stored on cloud. An aggregate key shared by a data owner to the user is based on the attributes of user. An attribute is any value such as identity, designation etc of user. If the attributes of the user are satisfied, then and only then he can access data stored over cloud using aggregate key. This model improves the efficiency of the system. i.e. instead of attaching attributes of user to a key, two separate files are formed, one file for key and another file for set of attributes.

Preeti Sirohi and Amit Agarwal has proposed the system  
Cloud Computing is next generation computing technology with the dynamic capabilities of adding new resources and services as per user demand and requirement. Cloud computing is fast growing technology which facilitates more and more users and organizations shifting towards opting their services to cloud. Data security is considered as the constant issue leading towards a hitch in the adoption of cloud computing. Data privacy, Integrity and trust issues are few severe security concerns leading to wide adoption of cloud computing. The advent of the proposed model has

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sufficient functionalities and capabilities which ensures the data security and integrity. The proposed framework focuses on the encryption and decryption approach facilitating the cloud user with data security assurance.

The proposed solution only talks about the increased security but does not talk about the performance. The solution also includes the functioning of forensic virtual machine, malware detection and real time monitoring of the system. In this paper, a survey of different security issues and threats are also presented. A data security framework also provides the transparency to both the cloud service provider and the cloud user thereby reducing data security threats in cloud environment this paper aims at success of Cloud computing is Virtualization, Service Oriented computing , Utility Computing, Load balancing, Multi-tenant environment, the ability of pay per use of computing resources reducing large capital expenditures. Also the objective of the paper is the protection of the data such as data privacy, data integrity.

Prof. Nalawade SR and Devrukhkar Akshay S[3] propose that the smart city is the concept emerging now a days since they helps in the automation of every items in the real life and these are time saving .since all are busy with their works no one has time to do their daily routines thus this will be a motivating item in everyones life. Through this smart city concept they controls many different factors effecting on a the city or the environment and controls the the factors such that the temperature, wheather, water etc. Raspberry pi is the basic requirement for the automation. Here the bus tracking is donewith the Raspberry pi with a GPS module. It will helps the travelers to get the correct information on bus timings.

V. Sandeep, K. Lalith, Gopal, S. Naveen, A. A. Mudhan, L. S. Kumar proposed the system [4] for the users to control home electronic appliances with high mobility and security. A set of switches will be controlled by internet with the use of a Raspberry pi micro-controller board. A Raspberry pi micro-controller board obtains user input from a website that is accessed through a user name and password. The customized user friendly website has several buttons to control the appliances.

A Raspberry pi will be located in a room and will be connected to all electronic appliances in the home with the help of electromagnetic relays. The Raspberry pi can be controlled from any distant place with the help of weaved cloud service. Webiopi framework gives us a platform to interact with Raspberry PI's General Purpose Input Output pins. The Raspberry pi then either passes or stops current through an electromagnetic relay connected to the intended switch and this closes/opens the circuit allowing the appliance to run or get switched off. Thus globally accessible automation of electronic appliances can be made possible with the use of a Raspberry Pi micro-controller board, an internet connection and relay switches in a user friendly way.

## II. HARDWARE PROTOTYPE

Self automation requires processors for the processing. In this we have some modules for the automation such as Raspberry pi3, GPs module, RFID module. The processing function performed by Raspberry pi and interface modules is a relay that is an electromagnetic relay.

### A. RFID Tag

A RFID tag consists of a silicon microchip attached to a small antenna and mounted on a substrate and encapsulated in different materials like plastic or glass veil and with an adhesive on the back side to be attached to objects.

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A reader consists of a scanner with antennas to transmit and receive signals and is responsible for



Fig. 1. RFID Tag

The Fig. 2 shows the passive RFID tag which is made up of PVC material. It contains the unique identification number to identify each tag separately. The RFID tags with a unique ID is used to identify each vehicle.

A fixed RFID reader is attached to one or more antennas and usually placed in a central location so you can see what is in that area at any given time. Without the need for human intervention, fixed readers can identify objects as they move through a doorway or dock because RFID transmits signals through most surfaces, including wooden pallets and containers.

A tag can be read from a distance, and it does not need to be within direct line-of-sight of the reader to track the object. There are two types of RFID tags that are widely used, active and passive. In active RFID systems, each and every tag has its own particular transmitter and power source. In most of the cases, the power source is a battery. In passive RFID systems, the reader sends a radio sign to the tag with the help of the reader antenna. The RFID tag uses the transmitted sign to control on, and reflect vitality back to the reader.

### *B. RFID reader*

A radio frequency identification reader is a device used to read the information stored in the database using the unique identification number of RFID tag, which is used to track individual objects. In RFID, radio waves are used to transmit data from the tag to a reader. The RFID tag does not have to be scanned directly and does not require line of sight to

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Fig. 2. RFID reader

### C. Raspberry Pi

Raspberry Pi is a small credit card sized minicomputer which has almost all the functionalities of a computer. It has the Qualcomm processor with better processing capability, RAM, input and output ports like the USB ports and display connector ports (HDMI) and other necessary ports. The Raspberry Pi has different models, which have different specifications and performance. Some model has inbuilt wireless connectivity like the Wi-Fi and Bluetooth which allows connecting to a network easily.

The Raspberry Pi is based on the Broadcom BCM2835 System on a Chip (SoC), which includes an ARM1176JZF-S 700 MHz processor, Video Core IV GPU and has 512 megabytes of RAM. The system is a Micro SD model and has sockets for boot media and persistent storage. The GPU (Graphics Processor Unit) is capable of Blu-ray quality playback, using H.264 at 40MBits/s. It has a fast 3D core accessed using the supplied Open GLES 2.0 (A graphics rendering application programming interface) and Open VG (Virtual Graphics) libraries. The chip specifically helps by providing HDMI (High Definition Multimedia Interface) and there is no VGA (Video Graphics Array) support.

The pi can have any type of operating systems like Windows, Linux, Android etc. With the inbuilt USB connectivity feature, the RFID reader device can simply connect to the pi. An application is developed to interface with the hardware and the database servers. The inbuilt connectivity methods will help to connect the reader device to the wireless network. The figure Fig. 4. Shows the raspberry pi minicomputer.

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Fig. 3. Raspberry Pi

## D. Server

A server is a device that provides functionality for other programs or devices and can provide services to multiple systems. The server used here have 500GB of storage space and 8GB of RAM for smooth operation.

The servers are used to store the data on a cloud platform. All the documents are stored on a database server which can be wirelessly accessed by the authorities.

## III. PROPOSED SYSTEM

Now all are busy with their schedules and they have no time for nothing. so as a solution for this system is emerging. This system consist of a Raspberry pi module, RFID module and some additional modules.

The Vehicle contains Raspberry Pi which is small credit card size processing unit with its own OS, memory and interfacing facility. The Raspberry Pi is programmable with languages like Python, C languages and the addition Modules like GSM/GPRS module can attach to it for webconnectivity. The Geolocation Tracking method is used to identify the location of bus. This location is sent to the web server where this location is store in MySQL database and updated to display on map. This raspberry pi will have the control on the vehicle. When users input is mismatched then the vehicle will automatically shut down.

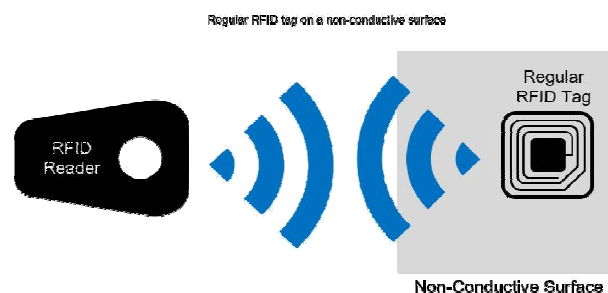


Fig. 4. Working of RFID

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RFID tag will be placed in the vehicle and every checkpoint will have the RFID reader which will fetch the datas from the tag placed on the vehicle. The RFID tag will contains the details of the vehicle like RC, insurance etc. When the vehicle passes through the signal the reader reads the information from the tag and then the details is texted to the owner and checks the validity of the documents.

We have a user module in which they can register the complaints if the vehicle is theft. The complaint registration is done with the vehicle identification number. If the vehicle registered passes through any of the traffic signals then the RFID module identify the vehicle and then the geolocation is sent to the owner.

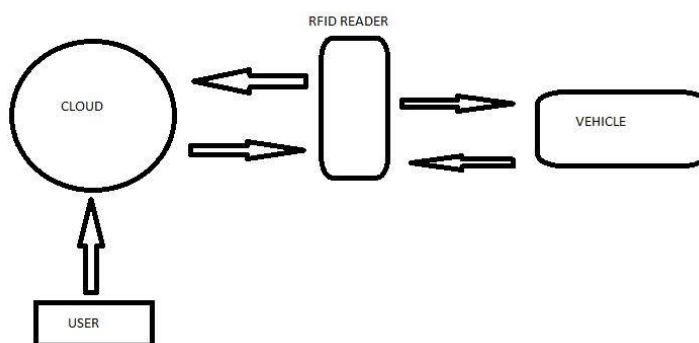


Fig. 5. Working of RFID

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