

## Kill Switch for a Bike to Create and Develop a Smart Switch for Advanced Protection of Bike

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### Abstract

*Internet of things is interconnection of physical devices, vehicles, home appliances, and other devices which are with electronics functionality, software, sensors, actuators, and connectivity which connection among these and exchange of data. It is the concept which enables to connect different devices to the internet and also to other connected devices. It is a massive network of connected objects and people, where all of them collect and share data about the environment and conditions around them. It includes various number of objects having different kinds and aspects- like smart microwaves, which automatically cook your food for the perfect amount of time, to self-driving cars, whose high level sensors detect path and obstacles in that path, to the fitness devices which measure your heartbeat rate, measures the calories burnt and the amount of steps you've taken that day, then use all that information to suggest exercise plans suitable to you. The main aim of our study is to give advanced protection to a vehicle, if we are in heavy parking zone then we have big problems to find our bike so, it will be easy by featuring the engine ON/OFF using a switch; it is a combination of Arduino, GPS and GSM module and RFID which is controlled using app. In this study, we have proposed to use Arduino UNO. It is the main part of the whole circuit. It processes all the data and controls all the outputs depending on inputs for ex: when GSM module/RFID send some output in binary language then it will be processed on Arduino then to get the desired output. GSM module is used for finding a bike when it is lost; it is used for connecting to a smartphone through text messaging. RFID is used as an option for starting a bike's engine supply when the smartphone is dead or it cannot get connected to a network area.*

**Keywords:** Computing, internet of things, network, smartphone, devices.

### INTRODUCTION

Internet of thing is the internetwork of distinct recognizing embedded computing devices within the real internet framework. So, internet of things is connecting multiple devices to internet. In most ingrained system where a single program is being executed with several subroutines. So, unlike your PC, microcontroller device in an embedded system runs a single program infinitely.

You can connect several input and output devices with these microcontrollers which

are either memory mapped or IO mapped. This simple hardware includes LCD display, buzzers, keypad (numpad) or even a printer. You connect several sensors through A/D interface. The devices can control higher power/voltage/current rating devices like fans, motors, bulbs using drives devices like relay- opt coupler and so on. IoT development devices into two parallel technologies: Wearable and Embedded. Developers can build apps for custom wearable devices to create their own platform using embedded solution and then can develop app for that platform.

The platforms are:

- Wearable Platform
- Embedded Platform
- Cloud Platform

In our study, we are using embedded platform, because embedded systems are more attractive than any other systems with the factors of being

- Autonomous, which build a system specific to a particular application.
- Low cost. which cost the microcontroller unit lower than a full-fledged computer in magnitudescale
- Take low space and lowpower.

There are many other factors which include I/O speed and cost, energy consumption per instruction and so on. So, we get a fair deal of understanding of what an embedded system is and what constructs an embedded system.

Internet of things is an architecture that comprises specialized hardware boards, Software systems, web based APIs, protocols which together creates a network environment which allows these embedded devices to be connected to internet such that sensors can detect and can be accessed and control system can be triggered through internet.

Arduino is the basic part or starting point for Internet of Things based embedded systems. Arduino is an open-source electronics platform which provides easy-to-use hardware and software utilities. Arduino is an architecture that integrates Atmel microcontroller family with standard hardware into a board with inbuilt boot loader for plug and play embedded programming. Arduino Software has its own IDE that helps writing, debugging and burning program into Arduino. The IDE also comes with a Serial Communication window through which you can easily get the serial data from the board.

Mobile phone is essentially an embedded system with a processor at the core having display and keypad. They support wide variety of sensors like ambient light

Sensors, Accelerometer, Gyroscope and so on. They are connected to internet. Mobile phones get IP addresses, can access internet. In other words, it virtually fits every description of Internet of Things. Radio frequency identification (RFID) makes it possible to use our phone as readers. We can obtain information from certain objects for sake of usability just by swiping it on the device or bringing it close to the device. RFID (Radio frequency identification) tags do not have any ingrained system. Thereto obtain the data, a reader can be used which reads data from internet. These objects do a smart work and gives efficiency. There are some non-processor entities whose data can be captured and transmitted over internet come under this category.

Internet of things also provides the GPS tracking system for tracking the vehicles. The device is fitted inside a vehicle whose location needs to be tracked.

Typical vehicle tracking system uses the GPS (Global Positioning System) to acquire the actual geographical location of the vehicle while the GSM (Global System for Mobile Communication)/GPRS (General Packet Radio Service) module is used for communication purpose and also it transmit and updates the vehicle location to the database. An app in a smartphone is used for continuous monitoring of the vehicle location. Users will be able to continuously monitor a vehicle in motion from their smartphone and can determine the approximate distance and time for the vehicle to arrive at a particular destination. So, the main goal of our study is to give advanced protection to the vehicle by featuring the engine ON/OFF using the switch which is a combination of Arduino, GPS and GSM module and RFID by controlling all this in your app.

#### **RELATED WORK**

Sachin P. Gawate [1] worked on forecast

of GPS (Global Positioning System)/ GSM (Global System for Mobile Communication) for guidance and assistance of driver and car supervision. He used wireless black box using MEMS(Micro-Electro-Mechanical Systems) accelerometer and GPS for tracking and monitoring the accidents and found its cause and effect. The system comprises of components like GPS module and GSM module.

Montaser Ramadan [2] worked on a reliable automated security system which is developed for anti-theft using an embedded system containing global positioning system (GPS) and system which enable mobile communication. The clients interacted through this system with the vehicles and seek their current locations and status using Google earth. The user could track the position of targeted vehicles on Google earth.

Sathe Pooja [3] worked on a model for routing and tracking of mobile based operating vehicles in a huge area in outdoor environment which is based on the global positioning system (GPS) and whole system for mobile communication. The GPS device continuously moved with the car and would calculate the coordinates of each position and when owner needs it could be communicated with the help of GSM module which is installed in both Transmitter as well as receiver side.

Mr. K. Sreenivasa Rao, [4] worked on a smart car security system which consisted of a face detection subsystem, a GPS (Global Positioning System) module, a GSM (Global System for Model Communications) module and a FPGA. The GPS sends the location of the car even when the car is lost, we can detect the face of the thief as well as the location of the car so, this is the most efficient car security system.

Amol S. Dhotre, [5] worked on developing

an enhancement of vehicle alarm security system with help of SMS facility. Rather than human to human communication, this system created somenew objects and entities which were machine to human communication. This was an upgrading and improving vehicle security system by integrating SMS features to alert vehicle owners whenever intrusion occurred.

Ishtiaq Rouf [6] worked on wireless networks with the combination of the modern automobiles system. They associated with these wireless systems, there were privacy and security examining wireless Tire pressure monitoring systems using experiments with confined tire pressure sensor modules and with a complete vehiclesystem.

**METHODOLOGY**

This system will deal with the analysis of where the problem has arrived with the bike.

Features:

Kill switch for the bike will be activated if user wants to use the bike.

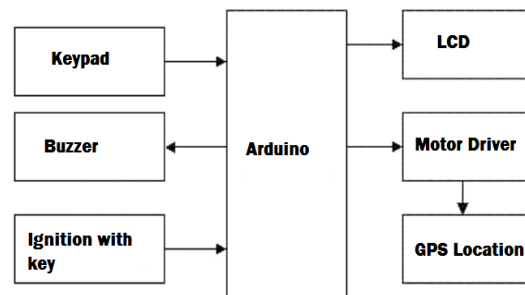
If user doesn't want to use the bike, user can switch off the switch.

Using android application user will be able to access the switch which will give permission to access the bikelock.

If someone is trying to switch on lock of the bike without user's permission, app will notify user about thief with a notification message.

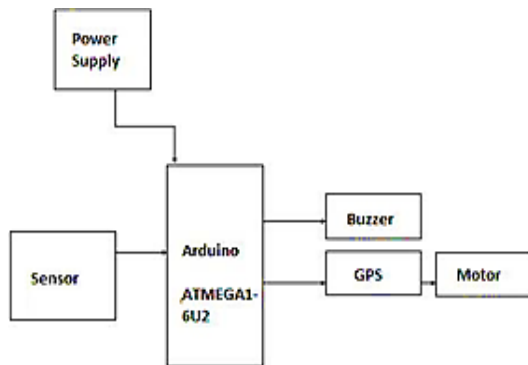
**System Architecture**

The architecture of the system is as shown in Fig.1.



*Figure 1: Architecture of the System.*

Fig.1 shows the basic structure of working of kill switch for bike. After receiving the inputs, Arduino helps the system to send particular message to the user and with the help of android application user will be able to put the switch on or off. LCD helps to indicate the status of the switch(ON/OFF).



**Figure 2:UML Component Diagram**

Fig. 2 represents the structure with the power supply. Batteries are used as a power supply to the circuit which is fixed inside the bike. GPS will help the user to track the location of the vehicle.

## RESULT

After completion of this system, a full-fledged bike switch will be developed. This switch will be able to lock the bike when given to any unknown person or when it is lost or stolen. We can lock it from the mobile application which is connected to the switch.

The system is able to find or locate the bike in any heavy parking zone with the help of the GPS.

The switch can be operated using the mobile application so it is very flexible and easy to use for the end user. In case if mobile battery is down or network area is not available then through the RFID sensor, we can just swipe the chip on the sensor and access the switch. An option is provided in the mobile application for finding the bike, when clicked the bike, indicators will start blinking and we can locate our bike easily.

## CONCLUSION

The system attempts to design and develop a switch that protects the vehicle from anybody who is trying to steal the bike; this system will help to protect the bike if anybody try to start the bike and is notified to the user by a particular message.

It requires less cost to build, so it is feasible for all the users.

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