

# VEHICLE ANTI THEFT DETECTION AND PROTECTION WITH IMAGE CAPTURE USING IOT

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**Abstract** – This paper focuses on an Anti-Theft vehicle detection system which is an advanced system and can be used in many cars. These days it is a simple thing for people to make duplicates of vehicle keys and because of them vehicle robberies have increased. In order to overcome such problem we have come up with a solution where our system captures images whenever un-authorized persons make use of vehicles. The system also contains a software app which is BLYNK where we can monitor everything related to our vehicle. With the help of switch commands we can start and stop the vehicle and the system also contains a push button keypad where a password will be pressed if any un-authorized person gives a wrong password the buzzer starts and we can capture the image of that person.. In this way system helps to secure such intelligent vehicles.

**Key Words:** ESP32 Dual core microcontroller, ESP 32 cam , BLYNK, Push button Keypad, DC motor.

## 1. INTRODUCTION

The vehicle crimes end in vehicle theft and trafficking which affect owners, companies which are chargeable for insurance and public safety all told countries and have connections to major gangland networks. So as to forestall vehicle theft, latest systems supported innovative technologies must be implemented to help enforcement agency yet as vehicle owners in tracking, controlling, recovering and arresting thieves. With this presented system vehicle pursuing and IOT based system which monitors, controls and proposes clear information about nearby enforcement agency and headquarters that perhaps be analyzed rapidly and a reliable mode of transportation. A networked connection of devices as an example cell phones, sensors and extra devices communicates and connect with none human interference with one another is identified as internet of things (IoT).

Internet-of-vehicles is that the area during which there's communication between vehicles and surroundings the data is shared with the network. Now IoT also allows conversation and skill to interact between vehicles by using transducers, gateways in addition as actuators. The present paper is concentrated on microcontrollers for real time

vehicle monitoring and IoT technology describing the vehicle tracking and system

## 2. HARDWARE REQUIREMENTS

### ESP32 Microcontroller:

In this project we used ESP32 dual core microcontroller which is economical, which uses very low power embedded on a chip-microcontrollers with incorporated wi-fi and dual-mode Bluetooth.. ESP32 is fabricated by Espressif systems. ESP32 is a 32-bit microcontroller which is comprised of 520KB of SRAM and 448KB of ROM.

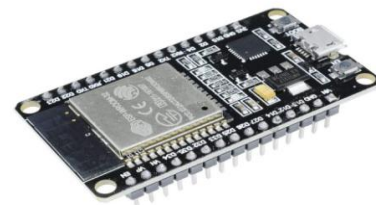


Fig-2.1 ESP32 Microcontroller

### ESP32 CAM:

ESP32 cam is the primary component in this project which takes the picture of the person if any un-authorized person uses our vehicle. ESP32 CAM we used is a high-tech board with wifi camera. It permits creating IP camera projects for video streaming. It has incorporated PCB antenna and this is also having Wifi/Bluetooth.



Fig-2.2 ESP32 CAM

**D.C. Motor:**

The motor in this project is connected to voltage regulator where it gets the supply and when the supply is on the motor starts rotating and is the very same as engine in the vehicle. We can start and stop the motor using controls in blynk app.



**Fig-2.3 D.C. Motor**

**Relay:**

Relay is also a switch that attach or detaches two circuits. But as a substitute of manual operation a relay is given an electrical signal which joins one circuits and other circuit. Relay will be having some set of input terminals and here we used for switching purpose in between microcontroller and motor.



**Fig-2.4 Relay**

**Buzzer:**

A buzzer is a device which is an audio signaling. The color of buzzer is black. The frequency range is 3,300Hz and the supply current is 15mA.

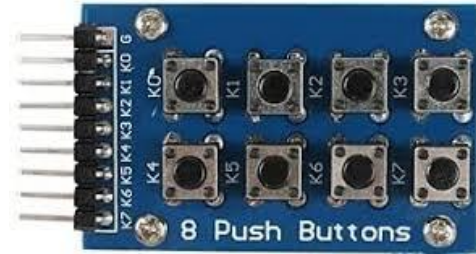


**Fig-2.5 Buzzer**

**Push-Button keypad:**

Keypad may be a important part in embedded systems and therefore the typical applications are code locks, calculators, automation systems or just any thing that needs a character or numeric input. This will exhibit the pressed

key in the serial monitor window of the arduino IDE. The identical project can be altered to display the pressed key on 7-segment LED display or an LCD display.



**Fig 2.6 Push Button Keypad**

**3. SOFTWARE DESCRIPTION**

**Arduino software:**

The Arduino software which is nothing but IDE is comfortable and simple to write code and dump into the board. It has text editor for writing code, a message area, a text console, a toolbar with buttons for familiar functions and a series of some menus. It links the Arduino and Genuino hardware to transmit programs and confluence with them.

Programs written by make using of Arduino Software (IDE) are termed as sketches. These sketches are inside of the text editor and are stored with the file extension .ino. The editor has some properties for trimming/pasting and for searching/replacing text. The message area gives commentary while saving and exporting and also dispose errors.. The underside manuscorder of the window displays the configured board and serial port. The toolbar buttons permits you to confirm and upload programs, create, open, and save sketches, and open the serial monitor.

**BLYNK APP:**

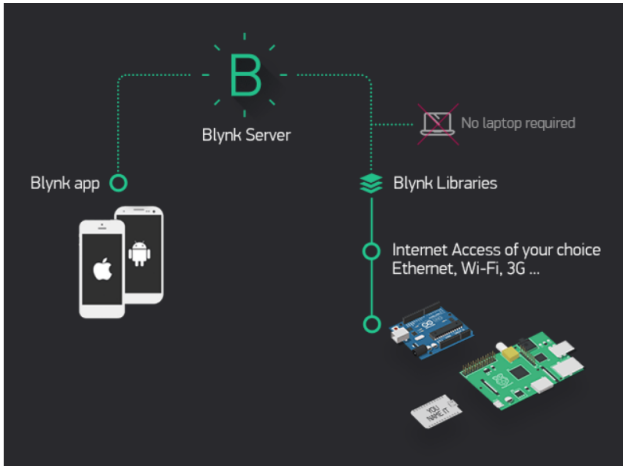
Blynk was designed for the net of Things. It can manage hardware remotely, it can exhibit sensor data, it can reserve data.

There are three crucial components within the platform:

- **Blynk App** - Lets you to make amazing interfaces for your projects using several widgets we offer.
- **Blynk Server** - accountable for all the communications in the middle of smartphone and hardware. You can our Blynk Cloud or run your private Blynk server locally. It's open-source, could comfortably handle thousands of devices and might even be setafloat on a Raspberry Pi.

- **Blynk Libraries** - authorizes communication with the server and process all the incoming and outgoing commands.

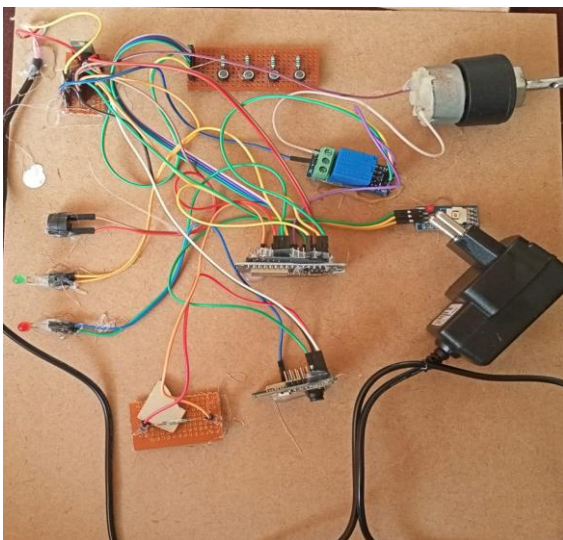
## 5. OUTPUT



**Fig-3.1** BLYNK app linking

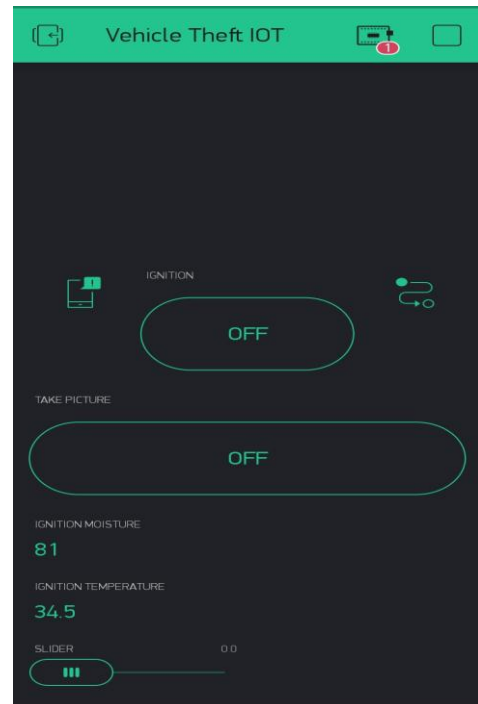
First we need to download this app and then we have to create a new project and have to interface the software with the hardware components by coding.

## 4. PRACTICAL KIT

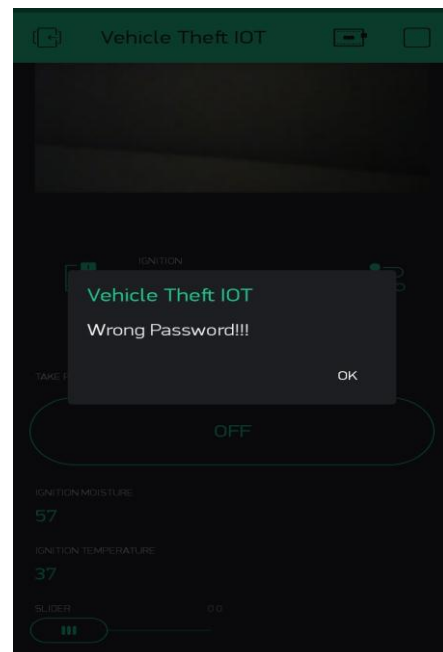


**Fig-4** Hardware kit

So our project looks like this where it is linked to blynk app. When we press on off label the motor starts and stop. And we can take the picture of the person by clicking on "Take picture". We can also monitor temperature and humidity.



**Fig-5.1** Vehicle theft IoT home page in blynk app



**Fig-5.2** Wrong password notification

So whenever an unknown person presses wrong password on pushbutton keypad then it gives a notification like wrong password and we can take the picture from the app.

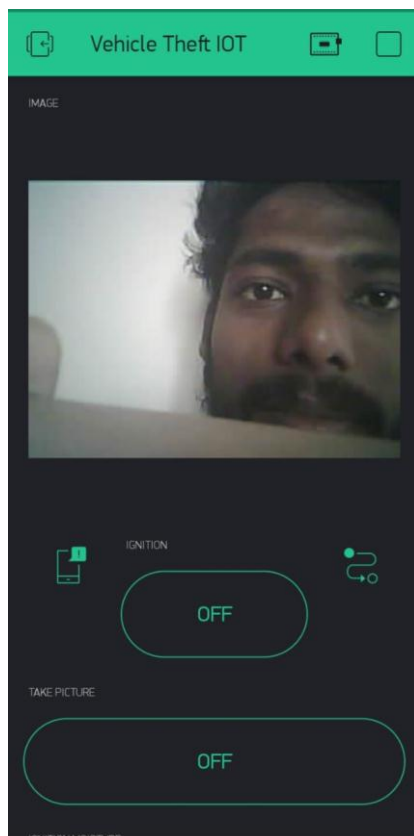


Fig- 5.3 Image captured

## 7. CONCLUSION

Thus this proposed project "IoT based Advanced vehicle system" would take the protection level a success and check out to hide many of the loopholes which are in existing technology. The affirmation shows that the IoT based advanced vehicle system is realistic and may control the theft automatically. This project can be further modified by using the application in which we can know the name of the place and location instead of using keypad we can use finger print and face recognition.

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## BIOGRAPHIES



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