

# Heist Tracking and Prevention in ATM Utilizing IOT and Blynk Server

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**Abstract-**In the digitalization, everybody needs cash without cooperation with bank whenever along these lines the ATM (Automotive Teller Machines) are introduced wherever inside the localities. Because the measure of ATMs expanded, anticipation of robbery and security of client is that the prime goal. at this, security frameworks aren't profoundly made sure about as they're just given alert. This venture manages plan and usage of ATM security framework utilizing NODEMCU. The prime target of this undertaking is, to make sure about the ATM framework utilizing IOT and vibration sensor. When a hoodlum enters and attempted to hurt the machine, the vibration sensor which is appended to the machine get vibrated and imparts the sign to the NODEMCU microcontroller. When the regulator gets signal, it bolts the entryway of ATM room by imparting sign to the dc engine and sprinkler sprinkles the chloroform to shape the hoodlum oblivious. The ringer additionally will be getting initiated simultaneously to alarm the close by individuals of ATM framework. All the while, the regulator will make an impression on an authorized individual of the bank through GPS modem and subsequently the entryway is made to open simply in the wake of entering the secret phrase by the bank staff.

**Keywords-**Vibration Sensor , IOT , Automotive Teller Machine, NODEMCU

## I. INTRODUCTION

ATM machines has many difficult, which they serve different functions, so we provide a high priority target to robbers and hackers. They work beneath advanced systems and networks to perform transactions. the knowledge processed by ATMs square measure sometimes encrypted, however hackers will use discrete hacking devices to hack accounts and withdraw the account's balance.

As an alternate, unskilled robbers threaten bank patrons with a weapon to loot their withdrawn cash or account. the web of Things (IOT) is that the network of physical objects or "things" embedded with electronics, software, sensors, and network property that allows these objects to collect and exchange information. IOT permits objects to be detected and controlled remotely across existing network infrastructure, making opportunities for extra direct integration between the physical world and computer-based systems, and resulting in improved efficiency, accuracy and economic profit. "Things," (ATMs) were 1<sup>st</sup> introduced in 1939. Nowadays, concerning three million units square measure put in worldwide. Because the variability of ATM units increase, the machines square measure vulnerable to hacker attacks, fraud, robberies and security breaches.

Within the past, the ATM machines main purpose was to deliver cash of bank notes and to debit a corresponding bank account. In order to extend the extent of security of the ATM networks use of biometric technique for verification in conjunction with existing PIN has been thought of an answer to decrease the increasing number of frauds. Also in rural areas people aren't educated enough to use the ATM machines so, use of only biometric verification can help those people access the ATMs during a neater manner and hence increase its popularity among rural masses. A WSN (wireless sensor network) generally consists of base station (or) gateway which may communicate with quite wireless sensors via a link. emu produces the facility.

Data Processing unit have the micro- controller, which is that the fully responsible to urge sensed data and transmit over the network microcontroller performs tasks, processes data and controls the functionality of other components within the sensor node. Sensing unit has the sensors and analogue to digital converter (ADC) to convert analogue sensed signal to digital signal. the proper WSN is networked and scalable, consumes little or no power, is sensible and software programmable, capable of fast data acquisition ,reliable and accurate over the very best of the day, costs little to urge and install, and requires no real maintenance. Selecting the optimum sensors and wireless communication slink requires knowledge of the appliance and problem definition.

## II.COMPONENTS REQUIRED

The Components required for ATM Theft Detection and Prevention using iot are the following:-

### 1.NodeMCU

NodeMCU is an open source firmware that open source prototyping board plans are accessible. The name "NodeMCU" consolidates "hub" and "MCU" (miniature regulator unit).[8]. The expression "NodeMCU" carefully alludes to the firmware as against the related advancement units.Both the firmware and prototyping board plans are open source. The firmware utilizes the Lua scripting language. The firmware depends on the eLua venture, and supported the Espressif Non-OS SDK for ESP8266. It utilizes many open source ventures, as an example, lua-cjson and SPIFFS because of asset limitations, clients need to choose the modules significant for his or her task and manufacture a firmware customized to their necessities. Backing for the 32-piece ESP32 has additionally been executed.The prototyping equipment normally utilized could also be a circuit board working as a double in-line bundle (DIP) which coordinates a USB regulator with a littler surface-mounted board containing the MCU and receiving wire. the selection of the DIP design takes into account simple prototyping on breadboards

### 2. PIR Sensor

Passive infra-red sensor (PIR sensor) is an electronic sensor that emits infra-red (IR) light when object near in the field. They're most every now and again utilized in PIR movement sensors. All items with a temperature overhead total zero transmit warm vitality as radiation. For the foremost part this radiation isn't obvious to natural eye since it transmits at infrared frequencies, however it alright could also be recognized by electronic gadgets planed for such a reason. A PIR movement sensor is employed to acknowledge development of people, creatures, or different items. they're regularly utilized in robber cautions and naturally actuated lightning gadgets. they're additionally called as "PID", for "Detached Infra-red Detector".The PIR sensor sense the infrared released or reflected from an item. The PIR sensors are utilized with Fresnel focal points to extend and appearance their FoV (Field of View) Fresnel focal points are sufficient vitality gatherers. Much of the time a spread of Fresnel focal points is employed to part the FoV into different unmistakable fields to create the affectability and productivity of the sensor.

### 3. Vibration sensor

Vibration sensors are often useful for monitoring the condition of rotating machinery, where overheating or excessive vibration could indicate excessive loading, inadequate lubrication, or bearing wear. Such sensors also are utilized in geophysical and applications requiring accelerometers. Piezoelectric vibration sensors used for

detecting vibration from various vibration sources are generally classified into two large types, resonant type and non resonant type.

### 4. GPS

The Global Positioning System (GPS),is a satellite-based radio navigation.The GPS made up of a network with 24 satellites circulating around earth orbit by the U.S Department of Defense(USDOD).It is one among the earth wide route satellite frameworks (GNSS) that provides geolocation and time data to a GPS recipient anyplace on or on the brink of the planet where there's an unhindered view to a minimum of 4 GPS satellites. The GPS doesn't need the client to speak any information, and it works freely of any telephonic or web gathering, however these advancements can improve the helpfulness of the GPS situating data. The GPS used to military, common, and business clients round the globe. The us government made the framework, takes care of it, and makes it openly available to anybody with a GPS collector.GPS permits land,sea and airborne user to figure out their three dimensional like position,velocity,time.

### 5. Arduino Software (IDE)

Arduino IDE may be a open-source software it mostly used for writing and compiling the code into the Arduino Module. It's an allowed Arduino software, making code gathering too easy that even a typical person with no prior technical knowledge can get their feet wet with the training method. it's easily possible for operating systems like MAC, Windows, and Linux which runs on the Java Platform that comes with inbuilt functions and commands that execute an important role in debugging, writing, and composing the code within things. A scope of Arduino modules available including Arduino Uno, Arduino Mega, Arduino Leonardo, Arduino Micro, etc.,. Each of them includes a microcontroller on the board that's programmed and admits the knowledge within the sort of code. The IDE environment mainly contains two basic parts: Editor and Compiler where the previous is employed for writing the specified code and thus subsequent is employed for compiling and uploading the code into the given Arduino Module. This background supports both C and C++ languages.

### 6. Blynk Android App

Blynk Android app could even be a replacement stage that permits you to quickly build interfaces for controlling and monitoring our hardware projects from IOS and Android devices. After downloading the Blynk app, we'll design a project dashboard and manage buttons, sliders, graphs, and other widgets onto the screen. it is a digital collection of data where we'll develop a graphic interface for our project by simply dragging and dropping widgets. It's really simple to line everything up which we'll start repairing in jiffy. Blynk isn't tied to some specific board or shield. Instead, it's holding the hardware of our choice. Blynk was created for the web of Things. It can control

hardware remotely, it can expose sensor data, and it can store data, visualize it, and do many other cool things.

There are three major components within the platform:

- Blynk App - It allows to you create wonderful interfaces for your projects using various widgets we offer.
- Blynk Server -we can provide communications between the smartphone and hardware . you'll use our Blynk Cloud or run your private Blynk server locally.
- Blynk Libraries - It suitable for all type of hardware platforms - provide communication with the server and process all the incoming and out coming commands.

### III. BLOCK DIAGRAM

The proposed venture comprises of an idea of executing Vibration Detection sensors. These sensors will create a logo at whatever point somebody attempts to powerfully open or harm the ATM machine. After discovery of such sign quickly a SMS are turning out to be to be sent to the approved individual of the bank, making him/her aware of things. Additionally we are utilizing a remote camera, so as that in such cases, the approved individual can have a live film of the ATM office onto his/her mobile .In this the GPS is associated which imparts the sign with location. As the quantity of ATMs expanded, counteraction of robbery and security of client is that the prime goal. at this, security frameworks aren't exceptionally made sure about as they're just given caution.

This undertaking manages plan and usage of ATM security framework utilizing vibration sensor and WIFI Modem. The prime goal of this task is, to make sure about the ATM framework utilizing vibration sensor and WIFI. during this venture, when a criminal enters and attempted to hurt the machine, the vibration sensor which is joined to the machine get vibrated and imparts the sign to the NODEMCU microcontroller. When the regulator gets signal, it bolts the entryway of ATM room by imparting sign to the dc engine and sprinkler sprinkles the chloroform to frame the cheat oblivious. The signal are additionally getting the chance to get actuated at an equal opportunity to alarm the close by individuals of ATM system. The proposed venture comprises of an idea of executing Vibration Detection sensors.

These sensors will create a logo at whatever point somebody attempts to strongly open or harm the ATM machine. After discovery of such sign quickly a SMS are turning out to be to be sent to the approved individual of the bank, making him/her aware of things. Additionally we are utilizing a remote camera, so as that in such cases, the approved individual can have a live film of the ATM office onto his/her mobile. In this the GPS is associated which imparts the sign with location.As the quantity of ATMs expanded, anticipation of robbery and security of

client is that the prime target. at this, security frameworks aren't exceptionally made sure about as they're just given caution. This venture manages plan and execution of ATM security framework utilizing vibration sensor and WIFI Modem. The prime goal of this venture is, to make sure about the ATM framework utilizing vibration sensor and WIFI. during this undertaking, when a cheat enters and attempted to hurt the machine, the vibration sensor which is appended to the machine get vibrated and imparts the sign to the NODEMCU microcontroller. When the regulator gets signal, it bolts the entryway of ATM room by imparting sign to the dc engine and sprinkler sprinkles the chloroform to shape the criminal oblivious. The bell are likewise getting the chance to get initiated at a comparable chance to caution the close by individuals of ATM framework.

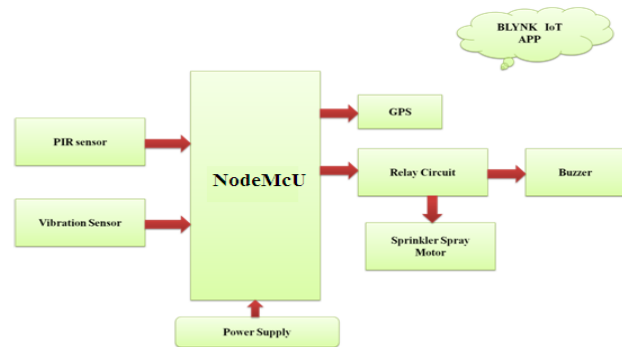


Fig-1 Block Diagram.

### IV. CONCLUSION

ATMs grant clients admittance to ask sum, stores, move of assets from any a zone of the world. Clients access their ledgers through an open-end credit. ATM focuses situated in expressways and far off Areas are defenceless to robbery. Burglary issues with respect to the ATM places are regularly maintained a strategic distance from by utilizing the proposed venture. The proposed venture brings us joining the aptitudes of parts like PIR sensor, web cam, Raspberry pi miniature regulator, caution and GPS. At whatever point PIR sensor identifies an individual's being moving inside the range roughly 10-12 meters from the sensor web cam get enacted through microcontroller to wish the persistent previews.

These photos are transferred to enlisted email in python code. A ready notice can send to the power or watching zone individuals close by if a private is staying pointlessly inside the ATM place. Subsequent to accepting notice watching or authority individuals can login to the mail-in and think about the live pictures. On the off chance that it is by all accounts any off-base thing occurs, they go to get hoodlums momentarily. Watching police officers can roundup territory under reconnaissance. In the event that they get alert notification particularly during evenings. An

alert included inside the venture will give ringer sounds and this may occupy the eye of the burglar. We are expanding the wellbeing at staggered and making ATM focuses liberated from burglary inclined.

## V. RESULT

In this outcome, the installed c program was created by utilizing Arduino IDE compiler. These projects were incorporated and convert into hex record. This hex document will be actualized in ESP8266 Programmable Chip. Using Inserted C program, the PIR sensor recognize burglary and impart high sign to ESP8266; it send ATM burglary notice into IOT cloud stage through Wi-Fi. The ADXL sensor is modified by D3 and D4 pins. It read the vibration level of ATM in simple worth or imagined chart. The consequence of sensor information is send into IOT cloud Platform IBM Watson or Blynk server. The message sends to the authorized person.

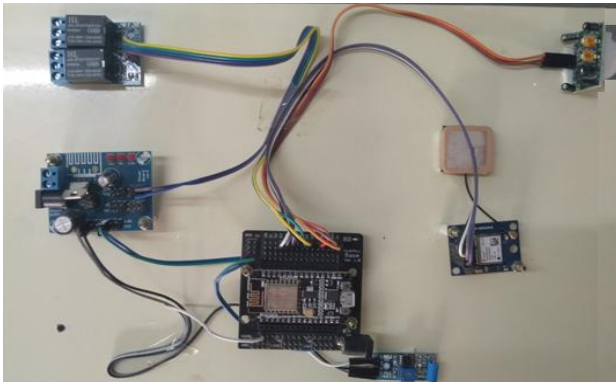


Fig-2 Results of Hardware Module.

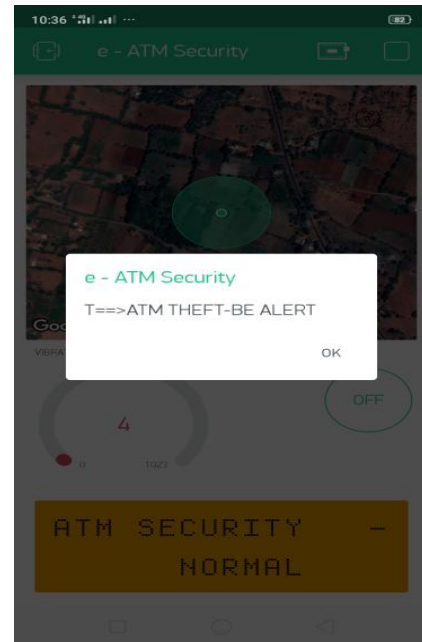
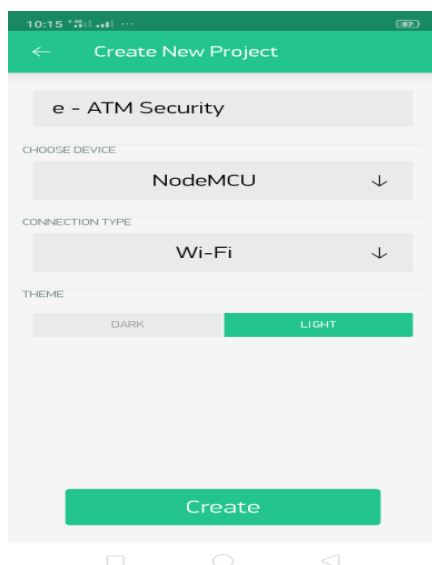


Fig.3 Result.

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