BACKSTOP SECURITY SYSTEM USING ARDUINO UNO WITH ESP8266MOD

[1]Arun Francis G, [2]Manikandan G, [3]Rajkumar K, [4]Sankar Balaji M,[5]Shree Hari M

*ABSTRACT--*Web of Things or IoT to put it plainly, is making gadgets and items more brilliant by connecting them to the web. IoT has promising applications for smart home, wearable devices and more. The primary objective of this project is to stop the intruder even if the smart security system is broken and it reduces the man power by designing and implementing a security system named as Backstop Security System (BSS) [1] that offers tractable through a Babysat mobile phone and PC by betokens of IoT. Our project proposes security system using IoT environment which intimates' intrusion in Home, Bank, Airports, Offices, University or any location and typically report to the administrator. The influence acquired by leaning toward this framework over comparative sort of existing frameworks is that the cautions send through Android application to make an intrusion alert over the Arduino UNO and Node MCU managed system can be received by user at any distance and to the nearby security personal's. Not only that, it also makes the intruder to loss his consciousness by electrocuting them with the help of the stun gun which is embedded inside the handle of the respective door.

*Keywords--*Internet of Things (IoT), Backstop Security System (BSS).

I.INTRODUCTION

As a part of today's scenario, safety and security plays a crucial role. The purpose of home intrusion detection is to detect the intruders and provide security using sensors by programming an embedded chip namely, a microcontroller. An Embedded system [1] is one of the biggest domains which control many of the common devices. These systems are designed to do a specific task, unlike general-purpose computers. Embedded systems are more preferred for real-time applications and have a specific operating system at times.The IOT plays a vital role in this project [2], with help of IOT the value is updated to the cloud. These devices can communicate to internet or a cellphone network, extending its applications in the domain of Internet of Things (IoT).

IoT might be an innovation that changes everyone physical articles into partner degree eco-framework that may advance our lives and makes it simpler. The principal popular stages utilized for IOT applications region unit Arduino UNO.

[1]*Assistant Professor, Department of Electronics and Communication Engineering, Karpagam College of Engineering, Coimbatore-641032,ja.arunji@gmail.com.*
[2]*Student, Department of Electronics and Communication Engineering, Karpagam College of Engineering, Coimbatore-641032,mail2mani24into7@gmail.com.*
[3]*Student, Department of Electronics and Communication Engineering, Karpagam College of Engineering, Coimbatore-641032, rajkumar1998vkl@gmail.com.*
[4]*Student, Department of Electronics and Communication Engineering, Karpagam College of Engineering, Coimbatore-641032, sankarbalaji45@gmail.com.*
[5]*Student, Department of Electronics and Communication Engineering, Karpagam College of Engineering, Coimbatore-641032, shreeharish610@gmail.com.*

II. THE CONCEPT OF LOCK SYSTEM

In this project we have the backstop system to prevent the intruder even if the smart security has broken. And to do so, there is some certain set of condition's that need to be attained. If it is attained,then the backstop system gets triggered and result's in activating the Taser which have been installed in it.

When the taser gets activated, the intruder will be electrocuted by certain amount of current which makes the intruder to be unconscious for several minutes. And during that time period, [7] the Android application willalert the numbers that has been already installed in it.

And the electrocution process will be done by passing the current through the handle of the door. This also requires the modified handle which has the certain length of steel needle that has been embedded inside the handle of the door. It is due to fact that "what if the intruder wears a gloves".And by passing the current through the steel needle which have been embedded, that case will be rectified.

Thus, the intruder will loss the state of consciousness and become unconscious for some certain time interval. And during that time Android application will alert the certain individuals such as Current user, [5] in-charge security and nearby security station etc.

And all of this backstop system will be maintained by the separate power supply. Thus, the backstop system will be activated even after shutting down the Supply that have been given the smart security system.

III. ARCHITECTURE OF THE BSS

The primary purpose of this idea is to stop the intruder even if the lock has been open. This is done by using the security system which consists of Arduino UNO, Node MCU, Camera module, Buzzer, Motor, shunt gun, Android Application along with the help of the Personal computer[PC].

Figure 1:security system which consists of Arduino UNOetc

A. Block Diagram

To understand the system more clearly, the Block Diagram of our security system is given below:
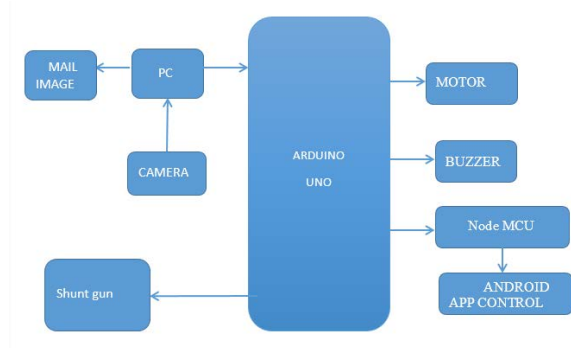
The working of the above shown components are explained below:

***Arduino UNO*:** It is an open source microcontroller board predicated on the Microchip microcontroller and developed by Arduino.cc. Simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter [3] or battery to get started which is utilized as a Central Processing Unit for this BSS lock System.

Node MCU :It is an open source IOT platform which is used to share data [5] with other IOT devices using Wi-Fi.

Camera Module: It is used for capturing the image of the person who standing in front of it.

Shunt gun: It is utilized to distributers an electric shock aimed at ephemerally disrupting muscle functions and/or inflicting pain without causing paramount injury.
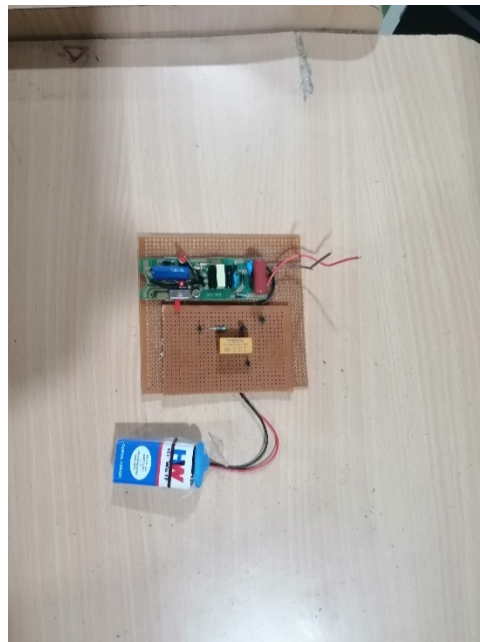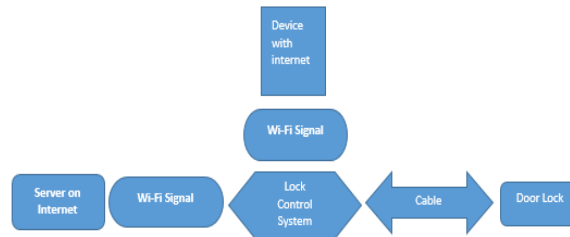

Figure 2:*DC Motor*

DC Motor : If the intruder try to open the lock, then this motor is triggered which results in popping needles.

B. A part of the system

From the above picture, there are the following parts in the BSS.

The BSS Lock system: The primary function of the combination is to open the door automatically [6] and to close the door automatically that was controlled by the user command that is without using any mechanical key.

Lock Control System of BSS: It is the primary part of the BSS lock system. Its main function is to trigger the door to open or close. Also, [7] it is functioned as the WEB server to find the user identity who is standing in front of the Door. This react as the core of the links in the middle of admin and BSS

*Server:*In this portion,[2] the utilizer identity is stored in the database and also the utilizer path to communicate with the lock system.

C.How the BSS system works?

Crafted by the framework is finished by enacting a Wi-Fi system to validate the head situated around the system inclusion environment. The BSS arrange the utilizer character and make the correspondence connect between the BSS and the Administrator of confirmation. The utilizer who situating close to the Authenticating territory will be offered access to open or close the BSS framework.

The fields for BSS lock framework recognizable proof procedure is characterized by the examines are [3]: Wi-Fi Network field and Authenticationfield.

*1). Wi-Fi Network field***:** Wi-Fi arrange field wrap the field that can be stretch by the Wi-Fi organize contraption in the lock framework.

*2). Verification field***:** This field is situated close to the BSS lock framework that is acted to open the entryway naturally when the utilizer of access is situated on the confirmation territory. Then again, [12]is thoughtfully intended to shun the entryway opened consequently and bolted naturally if the utilizer of confirmation is away from the entryway and that it keeps the observation of the utilizers.

Conditions

*Condition I:*For capture an image, the intruder or guest need to be present in-front of the door.

Condition II: For activating the backstop security system, read the response of an administrator through the Android application.

Condition III: For triggering an alarm system, the intruder should try to break the door by opening the lock.

IV. WORKING

The purpose of this work flow is to know the outline of the ongoing process. The PIR sensor shown in the rectangular box is used to detect motion [4]. The condition in a diamond box checks the value obtained from the sensor and processes the flow. If no motion is detected the sensor starts detecting and if motion detected, [5] an image is captured.

Then the captured image will be send to the administrators for the verification purpose. During the time period,this system will wait for the administrator response.

If the administrator responded it by 'Yes' or 'Allow 'or '1', then the one who standing before the door will be considered as an guest and after that they will be permitted to enter the house or specific secured area.

If the administrator responded it by 'No' or 'Not Allowed 'or '0',[4] then the one who standing before the door will be considered as an intruder. Even after sometime if they still standing before the door, they are advised to leave the place.

And If they try to forcefully open the door even after that, then the Backstop Security System (BSS) gets activated.During the process of forceful unlocking the intruder gets electrocuted and become unconscious.

Then the alarm system gets triggered and the Android Application will make the make intrusion call to the administrator,in-charge security and nearby security station etc.
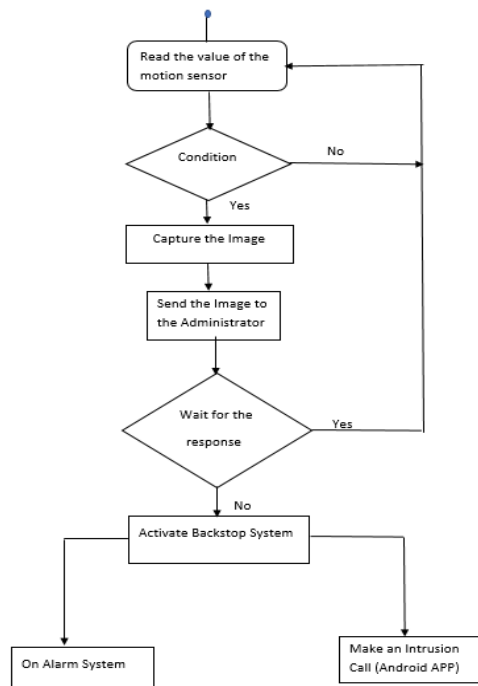
V. FUNCTIONS

To make it facile and managed well, the use of BSS application is distribute into two, they are :

A. Utilization on Web app

The use of site intended for two utilizer classes, they are the overseer and the utilizer. The application is intended to define [6] z the utilizers that can offering authorization to the BSS lock framework. The accompanying will be explained what the utilizer can do on the site application.

Chairman End : An Administrator can ready to coordinate, alter and theoretical,

a) the information of the utilizer invention.

b) the username and the secret word of the utilizer used to verify in to site.

UtilizerEnd: Anutilizer can sanction the guest by giving sanction.

B. The Utilization on Android Mobile Application

Android application is utilized by the utilizer to initiate BSS Lock framework to operational mode. To transmute the client's operational, it requires the secret word. What utilizer can do on the Android application are.

Triggering instinctive mechanism*:* It the mechanism is triggered, the android application will enact the Wi-Fi naturally that it empowers the induction to the BSS lock framework with no control to the framework.

VI. FUTURE SCOPE

We can improve this project by training an AI model for the automatic verification system of those who are all visiting or using it with the help of an HD camera embedding in it.

And with the help of Nano-technology, we can use this Backstop Security System (BSS) in various fields of security purposes.

Then also by adding the secondary backstopping system such as Centralizing the drowsing gas through the air vents,by this we can increase the security of the system to the next level.

VII. CONCLUSION

The IOT encourages various advantages to the general public and from our paper we can give and demonstrate the force of IOT that is able to contribute the lodging for the indicate of building galactic no. of utilizations and benefit to execute them on the open stage. [7] This thought gives moderate and less excessive method for detecting, checking and controlling framework in the field of local and just as mechanical standard to execute IOT.

At a last note, we infer that IOT prompts become macrocosmic in each perspective. [3] This paper will be extremely helpful in our commonplace everyday life and will get truly necessary development his speedy transmuting universe of innovation where individuals want to have command over things using the cell phones which will carry simplicity to their normal life.

REFERENCES

1. V.Pandit, P.Majgaonkar, P.Meher, S.Sapaliga and S.Bojewar, "Intelligent security lock", *2017 International Conference on Trends in Electronics and Informatics (ICEI)*, Tirunelveli, 2017, pp. 713-716.

2. G.Arun Francis, M.Dinesh, J.ArokLijo, P.Hariprasad,"IOT Based Vehicle Emission Monitoring System",*2019 International Journal of Innovative Technology and Exploring Engineering(IJITEE)*.

3. G.Arun Francis, S.K.Dharani, P.Manikandan, R.J.Monica,"IOT BASED ACCIDENT IDENTIFICATION AND ALERTING SYSTEM", *2018 International Journal of Pure and Applied Mathematics*.

4. G.Arun Francis, M.Sumanth, R Joy Priyadharshini, S.A.Vimal. "An IOT Based Monitoring and Control System for Environmental Conditions and Safety in Home",*2018 International Journal of Pure and Applied Mathematics*.

5. G.Arun Francis, M.Wilson Wilfred, "Health Monitoring with Alcohol Detection and Ignition Control System using IOT",*2019International Jorunal of Innovative Technology and Exploring Engineering (IJITEE)*.

6. G.ArunFrancis, V.Mithya, S.Balaji Venkatraman, A.K.Dinesh Raja. "Solution to Environment Disturbances using IOT (Making Alive)", *2019 International Journal of Innovative Technology and exploring Engineering (IJITEE)*.

7. Bhagavathi s, prakash a, gulshanwadhwa (2014) an insight to virtual ligand screening methods for structure-based drug design and methods to predict protein structure and function in lung cancer: approaches and progress. Journal of Critical Reviews, 1 (1), 10-24.

8. Chi-Huang Hung, Ying-Wen Bai, "Je-Hong Ren Design and implementation of a single button operation for a door lock control system based on a near field communication of a smartphone", *2015 IEEE 5th International Conference on Consumer Electronics - Berlin (ICCE-Berlin) J. Clerk Maxwell A Treatise on Electricity and Magnetism*, vol. 2, pp. 68-73, 1892.

9. Agrawal, S., & Gupta, H. (2014). State-of-the-Art on Cloud Ontology. International Scientific Journal on Science Engineering & Technology, 17(10), 898-904.

10. Cyrus, A.,& Nyakomitta, P.S. (2014). Multiple Human Tracking in Surveillance Videos. The SIJ Transactions on Computer Science Engineering & its Applications, 2(6), 1-6.

11. Saniotis, A. Evolving brain: Neuroanthropology, emergence, and cognitive frontiers (2009) NeuroQuantology, 7 (3), pp. 482-490.

12. Quandt-Wiese, G. Quantum state reduction by a physical interaction between the states and its perspective for biology (2009) NeuroQuantology, 7 (2), pp. 283-301.