THEFT CONTROL USING IoT

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Abstract- *Home security system is becoming necessary because the possibility of intrusion of unauthorized person is increasing day by day. To establish a complete security, we proposed a system where every process is intimated to the user and the data are processed to the cloud using IoT. GSM module is added in order to intimate to the user through SMS. Here the security is also extended to the street lights and neighboring houses. All operations that are performed are linked to the Internet to allow user to monitor and control things regardless of time and location constraint. This security system controls all possibilities of intrusion and makes a complete street protection. This proposed system is more effective and reliable. It consumes less data compared to other exiting systems*

Keywords- Home Security System unauthorizied person, Internet of Things, GSM, cloud, Street lights.

I. INTRODUCTION

Smart Security system has become life-sustaining in modern day life. The main idea of this proposed system is to prevent robbery in highly secured areas like home environment with lesser power consumption. This security system includes both intruder detection as well as door security.

The major part of any door security system is identifying accurately the person who enter through the door. The face recognition is the natural way to perform authentication between human beings.

Security is an most important aspect in the smart home system. Most of the countries adopting door security system. The door security system accurately identifies the persons enter through the door. This type of security system is low in cost and can be installed easily. It also includes the application of IoT to control our home from wherever we are. GSM module is used to directly intimate the user through SMS and it also intimates to the nearby police station. It uses vibration sensor and ultrasonic sensor to alert the user when gets activated. The Zigbee transmits the information to nearby houses and street lights by activating the buzzer and LED.

The main advantage of theft control system is that we can access the door using partial face detection the image is stored in the dataset. Human body is identified as an unauthorized person which is achieved by capturing live image from web camera and processing will be done on the capture image. The information is stored in the cloud and it can be accessed by the user and can activate the buzzer and LED.

II.LITERATURE REVIEW

Shafiqur Rehman, Volker Gruhn have proposed an Approach to Secure Smart Homes in Cyber Physical Systems/ Internet-of-Things.Home automation plays an important role in our daily life to control home appliances from a single touch or click. In this case, users are able to check home appliances from laptops, iPhone, iPod or other smart phone devices which supports to swap household appliances. Sensors are one of the mode important parts for smart home technology. In this paper, we propose a secure architecture for smart homes. We added a sicher firewall system between a central hub (LAN) that are linked to the cyberspace and other end that is connected to home appliances. In this way security threats become dejected and attackers are unable to reach home automation systems. A sicher firewall also protects system from internet threats. It generates a warning and protects system from external threats. Applying a sicher firewall, it enforces security system and increase security and concealment to smart homes. This experience will enhance user trustworthiness for using smart homes technology.

Sameek Ghosh, have proposed the Smart Homes: Architectural and Engineering Design Imperatives for Smart City Building Codes**.** This paper explores and defines the areas where architectural and engineering codes are required to be built in the building codes of Smart cities. In absence of such code, it will not lead the cities to a sustainable living space. As all the infrastructural issues are related to the fundamental building blocks, i.e., our homes and apartments, we must build codes to guide them toward smarter homes. And these codes should lead us to water and waste management, green building, safe and healthy living environment. This research work shows how various Smart city infrastructural initiatives are directly related to architectural and engineering discipline and the need to have a strong Smart city specific building code at the national and local level.

Mohamed Sameer Hoosain and Babu Sena Paul Smart homes have proposed a domestic demand response and demand side energy management system for future smart grids.. The concept of domestic energy efficiency is a concern at present and will be, in the future. So how do we optimize homes and users as to how they conserve energy? Domestic user's energy usage represents a large amount of total electricity demand. Typical home energy systems utilize a rudimentary form of energy efficiency and management. In this paper we look at a Demand Response and Demand side management system model to curb this situation. The demand response system is achieved by the utility turning on/off smart power plugs wirelessly throughout the home based on peak and off peak periods via communication through its smart grid. To help consumers shift their loads during these times, appliance power sources that can act autonomously based on wired or wireless signals received from the utility via its smart grid is required. Users in response to this, connect their appliances to these plugs by generating their own hierarchy system by prioritizing their appliance usage. Whereas the demand side management system allows users to manually configure dates and times for the turning on/off of the smart power plugs wirelessly through the user's smart user interface. Therefore, an energy efficient future smart home that can save the user on monthly expenditure and energy simultaneously is required.

Raymond Irudayaraj, Abdul Lateef have proposed Smart Home Based User Data Prediction Algorithm Model Raymond Irudayaraj, Abdul Lateef 2017 International Conference on Electrical, Electronics, Communication, Computer and Optimization Techniques. This paper presented client conduct expectation show which consolidated back propagation neural networks (BPNN) with Hadoop parallel processing to the conventional brilliant home framework, various client created conduct and natural parameters information are bundled specifically information outline arrange furthermore, transferred to the cloud stage through 4G or WLAN by the home door. As indicated by the got authentic information, rehashed parallel preparing of BPNN which keep running on cloud stage was used to accomplish client conduct forecast. Contextual analysis on shrewd home approved that the proposed display is substantial for client conduct forecast with precision lifted, it can help client to finish gear working freely in the relating cases. One of the greatest difficulties for the cutting edge smart home is learning out how to use the greater part of the information accessible to them in a way that is both significant and noteworthy. The potential for utilizing information produced by a database is frequently left unexplored, and accordingly, the aims and responses of individual digital users can be overlooked.

Gangyong Jia, Guangjie Han, Aohan Li have proposed Smart Street Lamp based on Fog Computing for Smarter Cities. Both safety and energy conservation are very important advantages of smart cities. Namely, the city street lamp is correlated with both safety. In order to address these problems, a smart street lamp (SSL) based on fog computing for smarter cities .The advantages of the proposed SSL are: 1) fine management, because every street lamp can be operated independently; 2) dynamic brightness adjustment, all street lamps can be adjusted dynamically. The experimental results showed that proposed SSL can improve energy efficiency and reduce danger.
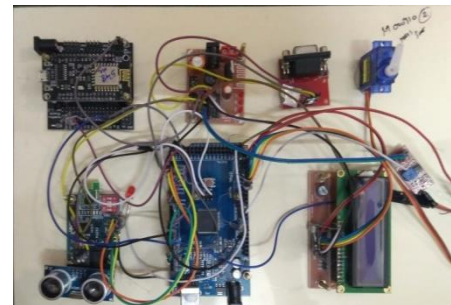
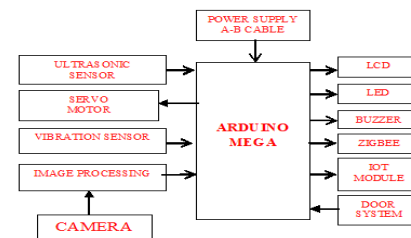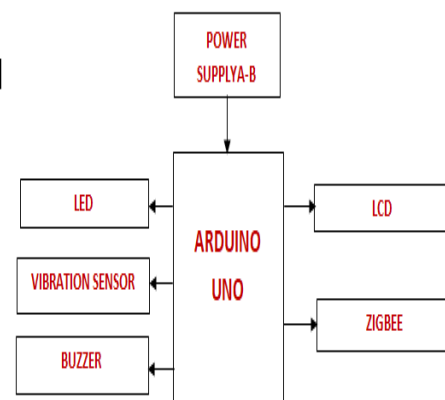## III. BLOCK DIAGRAM

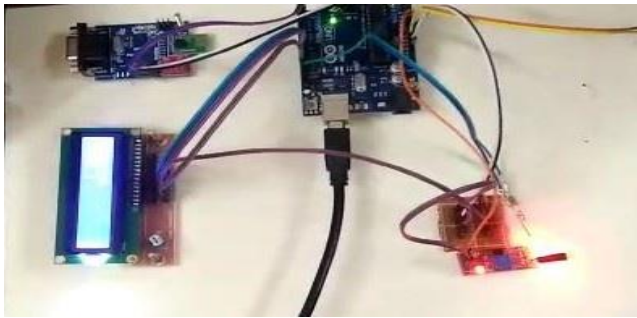1 TRANSMITTER SECTION

Fig 3.1 Transmitter Section

2 RECEIVER SECTION:
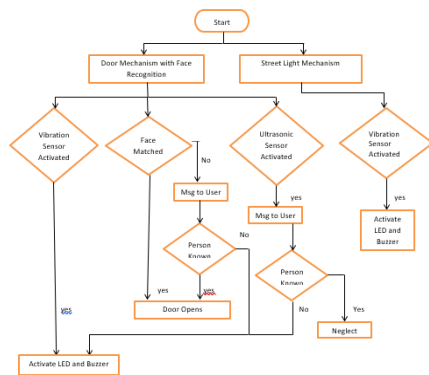
Fig 2. Receiver Section

Fig 3. Flowchart of Transmitter and Receiver Section

IV. EXISTING SYSTEM

Smart home security system is highly essential to develop a theft free environment. Security is an important feature in the smart home applications. Many approaches have been made to implement a smart city. Some of them are listed below.

- Face recognition is the natural way to perform authentication in door security system. It is the most popular biometric authentication trait after fingerprint technology.
- Automatic alert method sends automatic e-mail alerts to the nearby police station with captured images and other contact details attached to it.
- SMS based alert system uses GSM technology to send the SMS to the user.
- Usage of sensors enable us to collect information from the sensors to make decision and finally send SMS to corresponding number if any abnormality is detected.

Drawbacks that exist in our existing system are listed below:

- Operations and decisions are under machine control. So there is a possibility of false decision making in case of any system failure.
- Surroundings are unaware of intrusion.

V. PROPOSED SYSTEM

In the proposed system we can monitor the home remotely and that devices are controlled in IOT. In this proposed idea, cloud is used to store the information. GSM module is used to intimate the owner of the house about the stored information in the cloud whenever the camera detects the unknown person. It also intimates the user whenever there exits any damage to the door system. This idea uses multiple and efficient technologies to send the information to the user. This idea is extended to the street light which has the buzzer to inform the neighboring houses.

Advantages of proposed system:

➢ It can be operated automatically.
➢ More operations can be performed using Automation.
➢ Has intelligence to avoid manual mistakes.

VI HARDWARE AND SOFTWARE COMPONENTS

1 ARDUINO MEGA:

The Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 15 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Mega 2560 board is compatible with most shields .

2 SERVOMETER:

A servomotor is a rotary actuator or linear actuator. These are not a specific class of motor. The term servomotor is often used to refer to a motor suitable for use in a closed-loop system. The motor is paired with some type of encoder which provides position and speed feedback. Only the position is measured. The measured position of the output is compared to the command position which is given as the external input to controller. If the output position differs from that required, an error signal is generated which will cause the motor to rotate in either direction, as needed to bring the output shaft to the appropriate position. As the positions approach, the error signal reduces to zero and then the motor stops.

3 VIBRATION SENSOR:

Vibration sensor usually at any angle switch is ON state, by the vibration or movement, the rollers of the conduction current in the switch will produce a movement or vibration, causing the current through the disconnect or the rise of the resistance and trigger circuit. The vibration sensor detects shock intensity caused by sudden knocks or hits and continuous vibration due to faulty ball-bearings on fans and other equipment. Vibration sensors are easily installed and fixed to a variety of materials using screws in the housing or with the self-adhesive material supplied. The two contacts of sensor are not connected in idle condition. When external force is acted upon by either movement or vibration, the sensor's two contact pin are closed and contact is made between the two pins. When the force is removed the sensor terminals returns back to open contacts. The on-board blue LED visually indicates communication /online and activation.

4 ZIGBEE:

Zigbee is a wireless technology which is developed as an open global standard to address the unique needs of low-cost, low-power, wireless sensor networks. The standard takes full advantage of the IEEE 802.15.4 physical radio specification and operates in unlicensed bands worldwide at the following frequencies: 2.400–2.484 GHz, 902-928 MHz and 868.0–868.6 MHz. The Zigbee module acts as both transmitter and receiver. The Rx and Tx pins of ZIGBEE are connected to Tx and Rx of microcontroller respectively. The data from microcontroller is serially transmitted to Zigbee module via UART port. Then Zigbee transmits the data to another Zigbee. The data from Zigbee is transmitted from Dout pin. The Zigbee from other side receives the data via Din pin.

5 ULTRASONIC SENSOR:

Ultrasonic sensors are also known as transceivers. They work on a principle similar to radar or sonar which evaluate attributes of a target by interpreting the echoes from radio or sound waves respectively. Ultrasonic sensors generate high frequency sound waves and evaluate the echo which is received back by the sensor. Sensors calculate the time interval between sending the signal and receiving the echo to determine the distance to an object. This technology can be used for measuring: wind speed and direction (anemometer), fullness of a tank, and speed through air or water. For measuring speed or direction a device uses multiple detectors and calculates the speed from the relative distances to particulates in the air or water. Further applications include: humidifiers, sonar, burglar alarms, and non-destructive testing. Systems typically use a transducer which generates sound waves in the ultrasonic range, above 20,000 hertz, by turning electrical energy into sound, then upon receiving the echo turn the sound waves into electrical energy which can be measured and displayed.

6 LCD (LIQUID CRYSTAL DISPLAY)

LCD screen is an electronic display module. A 16x2 LCD display is a very basic module and is commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

7 EMBEDDED C:

Embedded C is a set of language extensions for the C Programming language by the C Standards committee to address commonality issues that exist between C extensions for different embedded systems. Historically, embedded C programming requires nonstandard extensions to the C language in order to support exotic features such as fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations. In 2008, the C Standards Committee extended the C language to address these issues by providing a common standard for all implementations to adhere to. It includes a number of features that are not available in normal C, such as, fixed-point arithmetic, named address spaces, and basic I/O hardware addressing. Embedded C uses most of the syntax and semantics of standard C, e.g., main() function, variable definition, datatype declaration, conditional statements (if, switch case), loops (while, for), functions, arrays and strings, structures and union, bit operations, macros, etc.

8 ARDUINO IDE:

The Arduino/Genuino Uno can be programmed with the (Arduino Software (IDE)). The ATmega328 on the Arduino/Genuino Uno comes preprogrammed with a bootloader that allows us to upload new code to it without the use of an external hardware programmer. It communicates using the original STK500 protocol (reference, C header

files).We can also bypass the bootloader and program the microcontroller through the ICSP (In-Circuit Serial Programming) header using Arduino ISP . The ATmega16U2 firmware source code is available in the Arduino repository. The ATmega16U2 is loaded with a DFU bootloader. We can then use Atmel's FLIP software (Windows) or the DFU programmer (Mac OS X and Linux) to load a new firmware. Or we can use the ISP header with an external programmer (overwriting the DFU bootloader)

9 MATLAB:

MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation. Typical uses include • Math and computation • Algorithm development • Data acquisition • Modeling, simulation, and prototyping • Data analysis, exploration, and visualization • Scientific and engineering graphics • Application development, including graphical user interface . This allows us to solve many technical computing problems, especially those with matrix and vector formulations. The name MATLAB stands for matrix laboratory. In university environments, it is the standard instructional tool for introductory and advanced courses in mathematics, engineering, and science. In industry, MATLAB is the tool of choice for high-productivity research, development, and analysis. MATLAB features a family of add-on application-specific solutions called toolboxes. Toolboxes are comprehensive collections of MATLAB functions (M-files) that extend the MATLAB environment to solve particular classes of problems. Areas in which toolboxes are available include signal processing, control systems, neural networks, fuzzy logic, wavelets, simulation, and many others.

VI. RESULTS

- WHEN FACE IS MATCHED

Fig I   This shows when the person comes in front of the door, the camera captures the images and the captured image is compared with the stored image. When the images are same, the LCD displays that the person is matched.

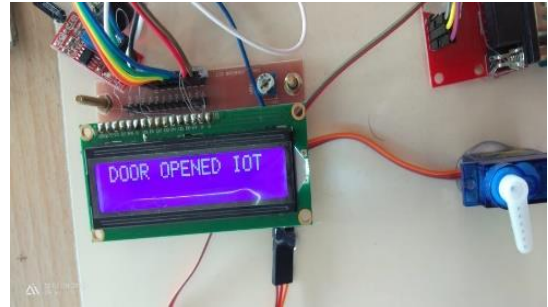- WHEN FACE MATCHES, DOOR OPENS

Fig II   This shows that when the person is matched with the stored image, the door automatically opens and it is displayed.

- WHEN FACE IS NOT MATCHED

Fig III The above image shows that when unauthorized person comes in front of the door, the camera compares with the stored image and displays that the person is unmatched.

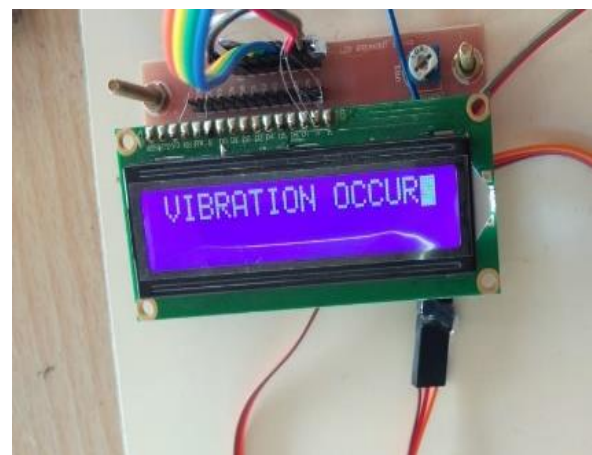- WHEN UNKNOWN PERSON BREAKS THE DOOR

Fig IV This figure shows that when the unauthorized person tries to break the door, vibration sensor detects it and then it sends the information to the owner. This is displayed in the LCD.

- STORING THE INFORMATION IN THE CLOUD

LogID	DATA	DATE_TIME
1	VIB_OCCUR	22/3/2019__13:9:51
2	VIB_OCCUR	22/3/2019__13:10:0
3	VIB_OCCUR	22/3/2019__13:10:9
4	VIB_OCCUR	22/3/2019__13:10:13
5	VIB_OCCUR	22/3/2019__13:10:22
6	VIB_OCCUR	22/3/2019__13:10:32
7	VIB_OCCUR	22/3/2019__13:10:41
8	STREET_LIGHT_DAMAGED	22/3/2019__13:10:50
9	STREET_LIGHT_DAMAGED	22/3/2019__13:10:59
10	VIB_OCCUR	22/3/2019__13:11:9
11	VIB_OCCUR	22/3/2019__13:11:18
12	VIB_OCCUR	22/3/2019__13:11:27
13	VIB_OCCUR	22/3/2019__13:11:36
14	ALERT	22/3/2019__13:11:45
15	ALERT	22/3/2019__13:11:54
16	PERSON_MATCHED	22/3/2019__13:12:3
17	PERSON_MATCHED	22/3/2019__13:12:12
18	ALERT	22/3/2019__13:12:20
19	ALERT	22/3/2019__13:12:29
20	ALERT	22/3/2019__13:12:38

Fig V This shows the information stored in the cloud. It stores all the information so that the user can check regularly

VII. CONCLUSION

In this project, an efficient approach for smart rooms have been implemented. The project has proposed the idea of smart streets that controls the unauthorized people from entering the house. It has been proposed for monitoring and tracking of the home through multiple and efficient technologies. Central control of entire street has been designed using various system designers. This idea consumes low power and energy. Thus an efficient technology is proposed. Thus, this proposed system can be implemented in real time for high security purpose.

FUTURE SCOPE

The future scope for this proposed system can be extended for the high security of banks and for various other institutions. Video recording can be done once the buzzer gets activated. GPRS system can be added in addition to the GSM. Using GPRS fast transmission of data occurs compared to GSM. We can also determine the position of the intruder and can send message to concerned authorities. A home drone can also be added which can able to fly in a burglar's face and trigger your home alarms.

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