

IoT Based House Hold Security Systems

Shreyans Kumar A, Sharan V, Dr.Karpagam M, Associate Professor,
Sri Krishna College of Engineering and Technology

Abstract— Internet of things has been governing the electronics era with cloud services dominating the ever increasing electronics product segment. Security and safety has always become a basic necessity for urban population. In this paper, we have modeled a IOT based House hold Security System . We have analyzed using GSM device, one can control the locking system automatically. We have compared the efficiency of RFID and GSM module of our proposed IOT based House Hold Security System with existing RFID control locking system. PIC software is used to model the performance of our controller.

*Index Terms—*PIC 16F877A , GSM MODULE, CAMERA, DOOR LOCKING SYSTEM COMPONENTS

I. INTRODUCTION

The Internet of Things (IoT) is the physical network of things or objects —devices, buildings, vehicles, and other items— embedded with electronics, software, sensors, and network connectivity that enables these things or objects to collect and exchange data.

An anti -theft system is any device or method used to prevent or deter the unauthorized appropriation of items considered valuable. Theft preemption based on IOT provides a system. Internet of Things is expected to produce high degree of human to machine communication along with machine to machine communication. This project proposes the security system using IOT, which prevents theft in home, bank etc. The primary objective of this project is to reduce human work. Automation has always been a prime factor for security system. We aimed in the project is to design and implement a security system. System that offers controllability through a hand held mobile phone by means of IOT.

he internet of things is the network of physical objects or “things” embedded with electronics software, sensors and connectivity to enable it to achieve greater value and service by exchanging data with the manufacturer, operator and/or other connected services. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing internet infrastructure. Typically, IOT is expected to offer advanced connectivity of devices, systems and services that goes beyond machine to machine communication (M2M) and covers a variety of protocols, domains and applications. The interconnection of these embedded devices is expected to usher in automation in nearly all fields, while also enabling advanced applications like a smart grid. These devices collect useful data with the help of various existing technologies and then autonomously flow the data between other devices.



Fig.1. Digital Notification

A key advantage of IOT based house hold security system is that there is no need of carrying key everywhere. The digital key data are stored in the cloud server and it can be accessed using internet from anywhere.

In this paper, we have framed the unlocking of door using GSM and pic controller automatically.

II. RELATED WORKS

1] Sirsath N. S, Dhole P. S, Mohire N. P, Naik S. C & Ratnaparkhi N.S This paper proposes a Home Automation system that employs the integration of multi-touch mobile devices, cloud networking, wireless communication, and power - line communication to provide the user with remote control of various lights and appliances within their home. This system uses a consolidation of a mobile phone application, handheld wireless remote, and PC based program to provide a means of user interface to the consumer.

[2] Basil Hamed The main objective of this Paper is to design and implement a control and monitor system for smart house. Smart house system consists of many systems that controlled by LabVIEW software as the main controlling system in this paper. Also, the smart house system was supported by remote control system as a sub controlling system. The system also is connected to the internet to monitor and control the house equipment's from anywhere in the world using LabVIEW.

[3] Deepali Javale, Mohd. Mohsin, Shreerang Nandanwar The prime objective of this paper is to assist handicapped/old aged people. It gives basic idea of how to control various home appliances and provide a security using Android phone/tab. The design consists of Android phone with home automation application, Arduino Mega ADK. User can interact with the android phone and send control signal to the Arduino ADK which in turn will control other embedded devices/sensors. [4] Basma M. Mohammad El-Basioni, Sherine M. Abd El-kader and Mahmoud Abdelmonim Fakhreldin This paper proposes a new design for the smart home using the wireless sensor network and the biometric technologies. The proposed system employs the biometric in the authentication for home entrance which enhances home security as well as easiness of home entering process. The structure of the system is described and the incorporated communications are analyzed, also an estimation for the whole system cost is given which is something lacking in a lot of other smart home designs offers. WB- SH is designed to be capable of incorporating in a building automation system and it can be applied to offices, clinics, and other places. The paper ends with an imagination for the future of the smart home when employs the biometric technology in a larger and

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III. PROPOSED PROTOCOL

Mobile has become a part of everyday life now a evolution has begun which will make that relationship even closer. The use of contactless connection allowing mobile to open locks is rapidly growing. The IOT based household security system is the backbone of the digital system that delivers contactless interaction house owners across the world are beginning to use keyless access. They are able to enter their home quickly and secure using their mobile. If the mobile is lost, Using cloud server the house door can be opened.

With IOT as base, when the house owner at work they could be able to access their house door automatically. The door open/close will be programmed and controlled by PIC (16F877a) controller. There are many other controllers but PIC 16F877a is highly compactible to perform this type of operation.

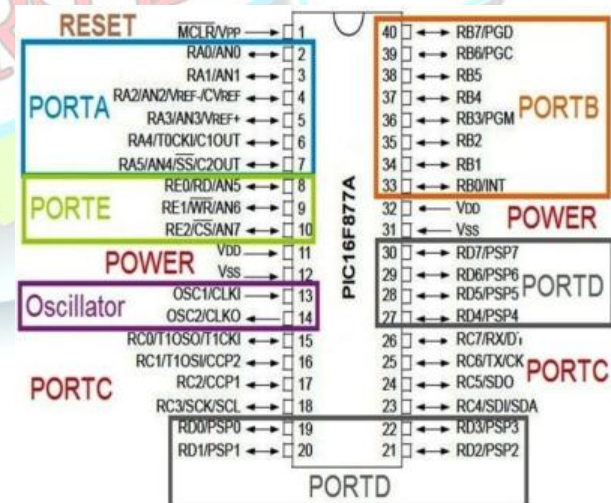


Fig.2. Pic16F877A controller

There is a GSM module attached to the controller which will help the controller to connect to the phone wirelessly. There will be a pre-defined server for the controller which will access and record the data. An application to access to those wireless server automatically will be created on phone. There will be a digital key option in the application to unlock the door.

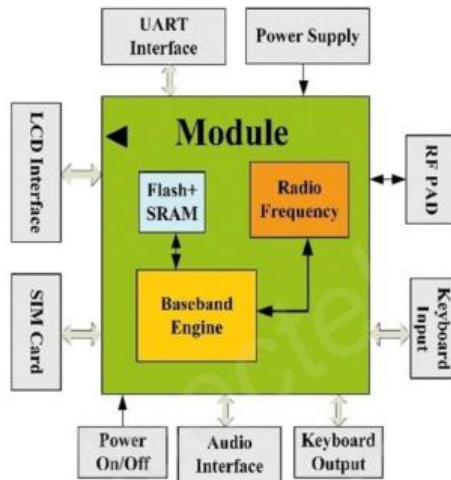


Fig.3. GSM architecture

There will be a camera attached to the door which will monitor the gate continuously. The camera will be programmed in such a way that the recorded data will be stored in the pre-defined server and there will be live-streaming option. The live streaming option which allows us to have eye on his home.

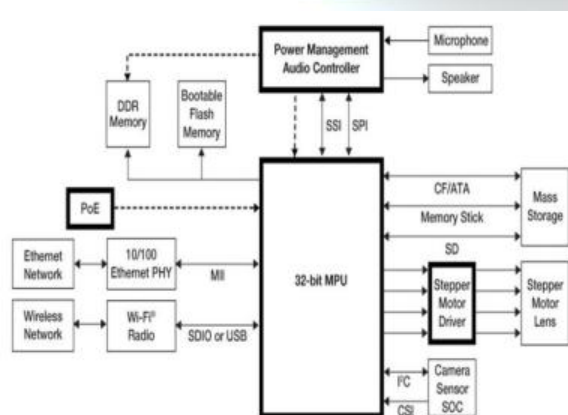


Fig.4. Live streaming Camera

When the owner is at work, a known person presses the bell; the PIC controller will activate. The GSM, which is already attached to the controller, will activate and send a notification to the house owner. When the notification reaches the owner and then the application is opened, a live video is streamed on his mobile. If the person's known digital key is pressed and the door is unlocked. The person is permitted to enter the house. This process is done wirelessly with the help of IOT. [10] discussed about Positioning Of a Vehicle in a Combined Indoor-Outdoor Scenario. The development in technology has given us all sophistications but equal amounts of threats too. This has brought us an urge to bring a complete security system that monitors an object continuously.

IV. PRE-PROCESSING:

For the testing of various algorithms, preprocessing is required because the images of the subjects are taken in an uncontrolled environment. For this purpose, we have done pre-processing steps. The images have been rotated up to a certain degree so that the face image could be aligned from the dynamic scenes, ousting the background.



Fig.5. Pre processed images

Illumination covariate together with pose is a real challenge in face recognition. Moreover, extreme lighting can also produce too bright images, which can affect the automatic recognition process. In the last decade, Face Modeling, Normalization and Preprocessing, and Invariant Features Extraction approaches have been addressed to resolve the illumination problem up to a certain level. In this research, normalization and preprocessing approaches have been attempted for illumination compensation because the algorithm of this category doesn't require any training and modelling steps.



When terms are correlated and column of design matrix N have an approximate linear dependence, the matrix $(N^T N)^{-1}$ becomes close to singular and estimated as:

$$p = (N^T N)^{-1} N^T x \quad (1)$$

which becomes highly sensitive to random errors in the observed response x , producing a large variance. Thus the situation of multi collinearity can arise.

V. CONCLUSION

In this paper, we evaluate the performance of IoT based House hold security system. The IoT based GSM module gives faster transmission by avoiding data traffic. The reliability of PIC microcontroller is compatible, so we can unlock the door much faster. This technique shows the way to unlock the door digitally.

In future, this technology can be more reliable and can be restricted. The household locking systems can be applied for specific rooms too which can only be accessed by the owner. If one of the rooms has to be accessed by the specific person, it can be programmed in the locking system.

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