

Arduino Based Security System

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ABSTRACT

There is a growing interest in intelligent home network as a way to offer a comfortable, convenient and safe environment for occupants. In order to enhance the occupants' convenience and safety, home security system is indispensable in the field of intelligent home network. The requirements of a home security system include low cost, low power consumption, easy installation and rapid response to alarm incidents. In previous systems, there is a use of smart cards for access the system which is not that much secure. Smart card can be stolen or misused by the intruders. The environment seen a rapid introduction of network enabled digital technology. By considering above flaws in systems the level of security is increased in the proposed system by using arduino based security system which based on microcontroller and sensor. This technology provides exciting and new opportunities to increase the connectivity of devices within the home or commercial for the purpose of security. In this project focused on sensor based security in which there are sensors, camera, motion detectors, and embedded kits are used.

Keywords: Home Security, Security System, Sensors, Arduino, PIR Motion Sensor.

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I. INTRODUCTION

There is a growing interest in intelligent network as a way to offer a comfortable, convenient and safe environment for users. In order to enhance the user's convenience and safety, security system is essential in the field of intelligent home network. The requirements of a security system include low cost, low power consumption, easy installation and quick response to alarm incident.

According to the connecting mode, network divided into two kinds: wireless network and non-wireless network. The wireless technology have some remarkable benefits comparing with the non-wireless technology. For example, it makes installation and maintenance easy and reduces system cost. Bluetooth, Zig-Bee, 802.11 and wireless USB are the popular technologies in the field of wireless network. There are home network which provides flexible and dynamic services via Bluetooth. The system which is having high power consumption and high cost so that it was not convenient to use in security system.

ARDUINOMEGA

Arduino is open source electronics prototyping platform composed of a microcontroller, a programming language, and IDE. Arduino is tool for making interactive applications, designed to simplify task for beginners but still flexible enough for experts to develop complex projects.



Figure: 1 Arduino Mega 2560

The first Arduino was introduced in 2005, aiming to provide a low cost, easy way for novices and professionals to create devices that interact with their environment using sensors and actuators. Common examples of such devices intended for beginner hobbyists include simple robots, thermostats,

and motion detectors. Arduino boards are available commercially in preassembled form, or as do-it-yourself kits. The hardware design specifications are openly available, allowing the Arduino boards to be produced by anyone.

B) PIR Motion Sensor:

PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range. They are small, inexpensive, low-power, easy to use and don't wear out. For that reason they are commonly found in appliances and gadgets used in homes or businesses. They are often referred to as PIR, "Passive Infrared", "Pyroelectric", or "IR motion" sensors. The PIR sensor is typically mounted on a printed circuit board containing the necessary electronics required to interpret the signals from the sensor itself. The complete assembly is usually contained within a housing, mounted in a location where the sensor can cover area to be monitored.



Figure: 2 PIR Motion Sensor

II. EXISTING SYSTEM

In earlier days we use a door lock, latch to secure our home or any other confidential data in office. In door lock and latch we use key to lock the home but, there is many possibilities of creating a duplicate key or master key to unlock door latch or door lock, so there are lots of probability to break the security of home.

In our system we do not use any type of key to secure the home. In our system we use security pin code to secure from unauthorized access and intruders. Those user having that security pin code only they enter into that home. In earlier days we use a door lock, latch to secure our home or any other confidential data in office.

III. PROBLEM STATEMENT

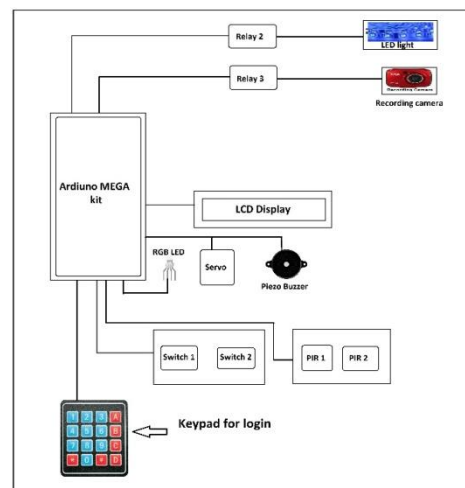
Our primary objective is to prevent any event that may pose a security or safety concern from implementation in the home networks.

Security is a main concern in our day-to-day life. Everyone wants to be as more secure as possible. Knowing your home is protected provide a peace of mind both when you are away and when you are at home. Security is much important even if you have better public safety agencies (police, fire etc.) in your area. So we would like to implement our project do everything possible to make your home and company secure rather than just relying on others.

TECHNICAL SPECIFICATION USED :

- Arduino IDE 1.0.6
- Embedded C
- Arduino Mega 2560, PIR Motion Sensor

IV. SYSTEM ARCHITECTURE



A) System Activation:

In this user has to first enter pin on system to avoid unauthorization.

B) Security activate:

after successfully enter pin, security system gets activated.

C) Sensors and alarm:

When malicious activity happens, then sensors sense that particular activity and generate alarm

D) Recording:

The camera gets started after generating alarm for recording of malicious activity

E) Deactivate System:

After enter password/pin into a system, the system gets deactivated.

V. RESULTS

1. SYSTEM ON WINDOW :



Figure: 1 SYSTEM ON WINDOW

When system is powered on, it shows above window

2. SYSTEM ACTIVATION :



Figure: 2 SYSTEM ACTIVATION

After entering the pin system gets activated show the below screen i.e. details shown in figure 2.



Figure: 3 MOTION IN GARAGE



Figure: 4 MOTION IN BEDROOM 1

When movement is detected by sensor in bedroom and garage screen displays above window

3. SYSTEM DEACTIVATION :

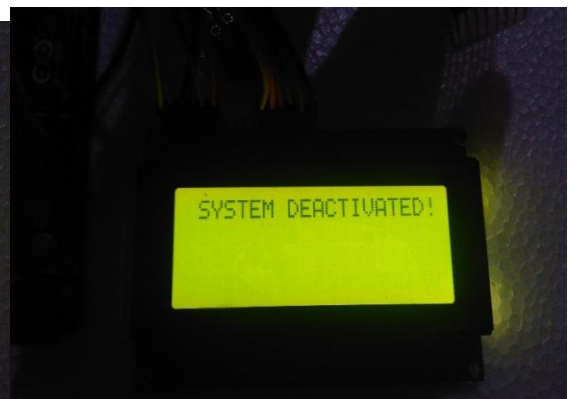


Figure: 5 SYSTEM DEACTIVATION

To deactivate the system we have to re-enter the password. After entering the correct pin system gets deactivated and shows above window

VI.CONCLUSION

We implemented a security system using Arduino microcontroller, sensors and camera. Implementing a security system give user a better privacy and safety. It has also provide peace of mind. We are try to characterize better security solutions to the users and then examine whether those tasks can be performed effectively or not.

ACKNOWLEDGMENT

We would like to thank our guide and various technological experts who researches about malware detection and improve the result by implementing new methods. We would also like to thank various web search engines for providing details on different issues on malware detection and about other related techniques.

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