Smart Door Locking System with Intrusion Detection

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Introduction

- Banks, ATMs, Financial Organizations, Government Offices and Organizations are one of the most common targets where unauthorized access takes place.
- Such activities are performed with either the intent of stealing money or some important documents.
- Lack of a proper security mechanism for access points to these facilities can result in burglaries or other break-ins.
- This project aims at creating an IOT based Smart Door Locking System which can also detect any intruders who loiter around the doors when the door is shut.
- This ensures that proper security is maintained at those areas and the owner is notified of any misconducts, if any.

Literature Review

Paper Name	Author	Idea
Smart Door Locking System using IoT	Karthik A Patil, Niteen Vittalkar, Pavan Hiremath, Manoj A Murthy	How a smartphone can assist in operating an IOT enabled door lock
A Study on the IoT Based Smart Door Lock System	Jeong-ile Jeong	Using a smartphone to remotely unlock a door
Design and Implementation of Digital Door Lock by IoT	Dae Gyu Seo *et al.*	Using an android smartphone as a digital key for the door lock
Smart Surveillance Monitoring System using Raspberry Pi and PIR sensor	Sanjana Prasad, P. Mahalakshmi, A.John Clement Sunder, R Swathi	Using a PIR sensor for smart surveillance and detecting intruders

Literature Review

Paper Name	Author	Idea
IoT-Enabled Door Lock System	Trio Adiono *et al.*	Using a solenoid lock to enable automatic locking with IoT
A Prototype of Smart Lock Based on Internet of Things (IoT) with ESP8266	Firza Fadlullah Asman, Endi Permata, Mohammad Fatkhurrokhman	Usage of ESP8266 module in a door lock system using IoT
Smart Phone - Arduino based of Smart Door Lock/unlock using RC4 stream Cipher Implemented in Smart Home	Dr Abbas M. Al. Bakry, Rajaa D. Resan	Arduino UNO can be used in a smart door lock IoT project and its benefits

Problem Statement

- In this current digital age, security of highly sensitive places is very important. Newer and newer technologies enable the thieves to get through the modern security systems easily. In order to safeguard any place, a proper and secure door locking system is needed. Implementation of the same with technologies provided by the Internet of Things along with the various wireless technologies can prove effective in such scenario.

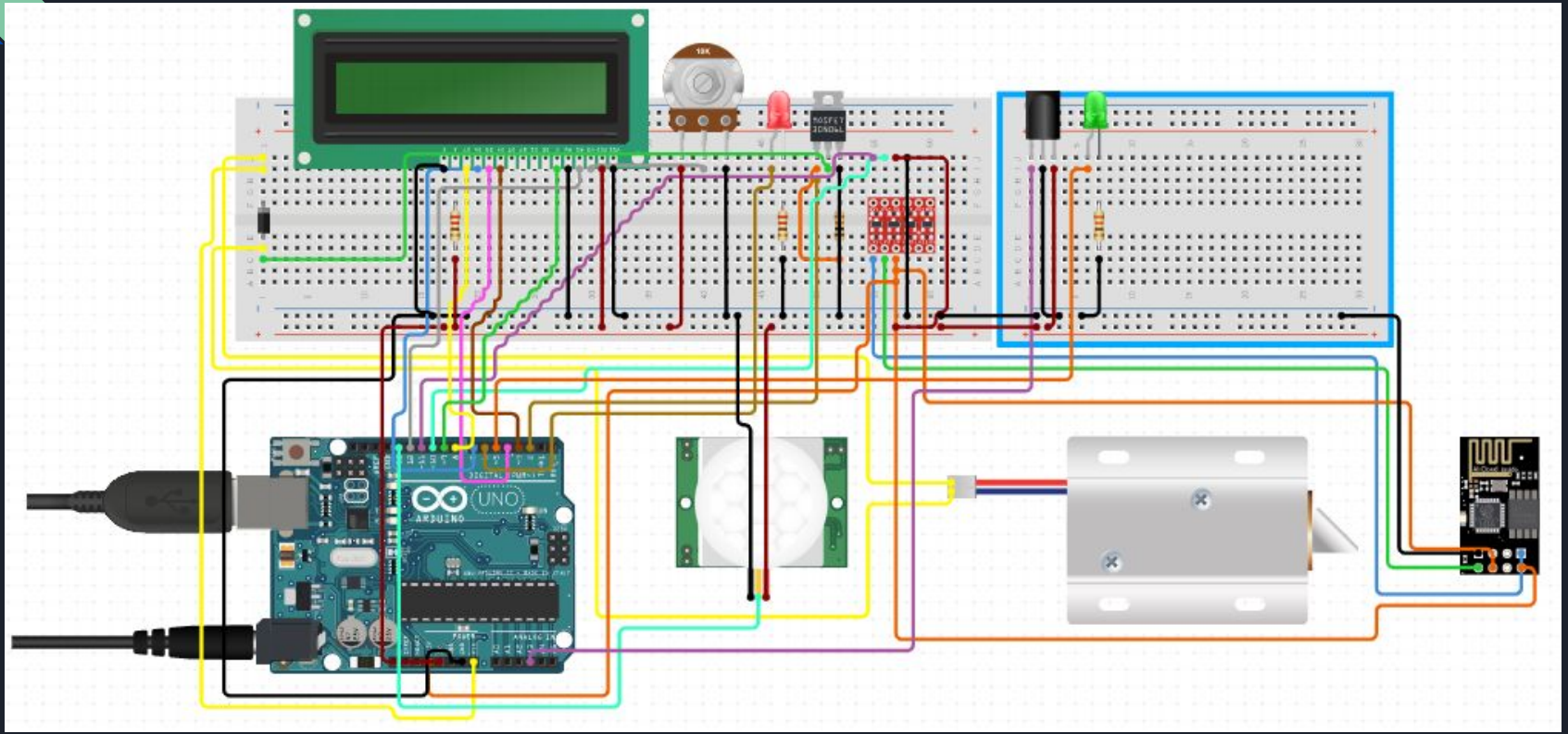
Abstract

- IoT based door locking systems have been prove effective in this digital age. Leveraging various wireless technologies provided by IoT can aid in creating efficient and effective solutions to today's problems. This project aims at creating a smart door locking system using IoT, which uses the ESP8266 wireless sensor along with ThingSpeak cloud, to create a secure system which can also detect any intruders using the PIR motion sensor.

Objectives

- To overcome the shortcomings of traditional lock systems.
- To create a secure door locking system.
- To notify users of any intruders.
- To add an extra layer of security using the PIR motion sensor.
- To create a cost effective solution for securing sensitive facilities.
- To leverage Thingspeak cloud for easy interfacing with the lock using wireless technologies.

Circuit Diagram



Components

Hardware

- Arduino UNO
- ESP8266 Wifi Module
- IR Receiver Diode
- PIR Sensor
- 12VDC Lock-Style Solenoid
- 1x Green LED
- 1x Red LED
- 16x2 LCD
- IR Remote

Software

- Tinkercad
- Arduino IDE
- C (Programming Language)

Conclusion

- Security issues are becoming more important and developed day by day.
- Thus, an attempt at creating an enhanced door lock using IoT and wireless networking is made.
- The user is also made aware of the intruders via ThingSpeak platform.

Future Scope

- Due to the nature of the project, it is possible to add various modules. One of those can be the ability to directly send SMS to the owner using a GSM module. Other addition can be an alarm which notifies everyone around the device using buzzers and speakers.

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