Name(s)

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Project Number

J0926

Project Title

A Better, Cheaper Security System

Abstract

Objectives/Goals

The goal of this project is to build a homemade security system that can compete with commercial security systems in features and usability, and to build it in a DIY, (Do It Yourself) cheaper way, releasing the finished code as open-source.

Methods/Materials

Buzzer, Reed Switch, PIR Sensor, Webcam
Raspberry Pi, Arduino

1. The homemade security system was armed from the manage tab on the web GUI
2. A "break in" was performed by walking into a room that was secured by a security system and staying in the room for five seconds, then leaving the room, and the time between receiving the security system's alert (alert from web/alarm) and the break-in was recorded
3. These steps were repeated five (5) times to verify accuracy and to minimize error, recording the data for accuracy, reaction time. Cost was then separately measured.

Results

The Security System with both IR and RS outperformed all other security systems. It made no errors in all its trials and additionally was able to take more pictures because of a faster reaction time and increased accuracy. The IR sensor made one mistake because it triggered on the door swinging shut. The different models of the Homemade Security System cost considerably less than the commercial security system for long-term usage. (10 years)

Conclusions/Discussion

Overall, throughout this project, the homemade security system was able to meet the goal and even surpass it in some ways. For example, the security system was originally intended to provide a simple, working web interface to manage the security system. The final product was a fully secure web application that used HTTP POST along with PHP5 sessions to keep the user authenticated to ensure that this system can only be controlled by a fully authenticated user. The webpage blocks any users that are not logged In and redirects them to the main login page, done using PHP5 sessions.

The homemade security system was able to keep up with the commercial security system#it detected all of the intrusions and took pictures. Additionally, there was an extremely large price margin between the homemade security system and the commercial subscription-based security system.

Summary Statement

The goal of this project is to build a homemade security system that can compete with commercial security systems in features and usability, and to build it in a DIY, (Do It Yourself) cheaper way, releasing the finished code as open-source.

Help Received

Dad helped cut wood with saw.