INVISIBLE EYE - AN ADVANCED SECURITY SYSTEM

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Introduction

In this modern era, property crimes are more predominant. This necessitates our need to develop an advanced security system which is the INVISIBLE EYE. It is basically a single camera based security system that can be used to protect valuables kept in a room of a house or property.

Most existing camera based security systems involve the use of multiple cameras placed around the room to be monitored. These cameras continuously record video footage of the room and save it on a central monitoring station.

Instead of this, we may use a different system in which a single camera is used, that can slew around the room and record only when it is alerted by the presence of any intrusion. Such a system would consist of three components - sensors that detect intrusion; the camera that slews to the point of intrusion and takes pictures; and the keypad that is used to interface with the system which allows any person to disable the system by entering the right password.

Objectives

To design advanced security with an affordable and less complex system referred as “Invisible Eye”

Methodology

This system consists of the following components:

- Sensors
- Microcontroller
- Stepper motor
- Camera
- Personal Computer

Basic block diagram of the Invisible Eye security system.

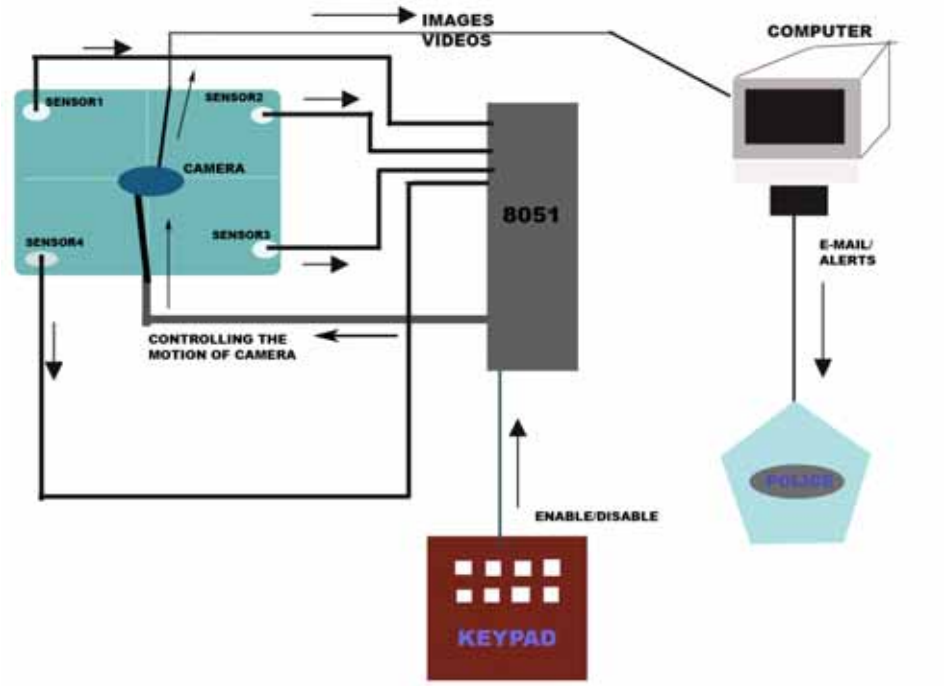

Figure 1. Block diagram of the Invisible Eye system.

Steps involved

Testing the source code: The source code for the microcontroller was tested without connecting the other parts such as the sensors and the keypad. The signals indicating the presence of intruders was simulated.

Testing the sensor circuit : The sensor was placed on the surface of a table and its output was observed for vibrations caused by tapping on the table.

Verifying the keypad interface

The next step was to verify the keypad interface to see whether the code works properly. The code was tested by burning into another microcontroller.

Integrating the system

By assembling the stepper motor(along with the camera), sensor circuits and the keypad with the main microcontroller kit.

Next, the keypad was integrated into the system whose activation depends on the password entered on the keypad.

Conclusion

- *Invisible Eye* security system solves many of the problems faced by the multiple camera based systems at an easily affordable cost.
- The biggest advantage is that we can avoid having to wade through hours of footage of empty rooms
- One can also avoid having to install multiple cameras to cover a single room.

Scope for Future Work

To completely eliminate the use of the microcontroller and instead use the parallel port of the PC to monitor the sensors and control the sensors. Also, advanced image processing techniques can be applied to track the intruder once his position has been identified.