

Embedded Systems Project

Simple Security System

Overview

Simple Security System uses the concept of Internet Of Things (IoT), where it uses sensors to detect unusual changes near the object we want to secure.

The detected changes from the sensors in the Arduino will be sent as an alarm to an android phone via bluetooth.

Features

1- Detect movement near the secured object using the PIR sensor.(For example someone wants to steal the object).

2- Detect temperature changes near the object (For example a very high temperature could damage the object or even indicate fire).

3- Android mobile phone will receive a message telling the type of the danger near the object using the bluetooth capability of the mobile phone and a bluetooth module connected to the Arduino.

Hardware Used



PIR sensor

Temperature sensor

Bluetooth module



Arduino

Software Used

Android

Reducing power consumption in the android app

- 1- Not using full wake locks which prevents screen from turning off.
- 2- Using darker screen colours consumes less power
- 3-Avoid floating point math.
- 4-From the below graph we see that the use of the bluetooth to make connection between Arduino and android device is appropriate since the amount of data sent from Arduino is not large and bluetooth is the least technology that drains battery.

5-Anyways our android app part is not cpu intensive so it won't cause high power consumption making computations.

6- App is running on the foreground of the cell phone, which consumes energy due to graphics

Solution -> Making the app run in the background

7- Keeping the screen lit for too long

Solution -> Turning off the Cell phone when not using the app