CSE316: Microprocessors, Microcontrollers, and Embedded Systems Sessional Project

Group Members

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Smart Home

OVERVIEW

The advancement of electronics has sky-rocketed over the past few decades. There is hardly any field where the use of electronics is yet to be seen. The housing industry is no exception. The use of electronic components in our houses can increase human comfort and enable us to tackle modern security threats in a very modern and digitalized way. So, we present our project, Smart Home, a home with automated technology to ease our lifestyle and help us tackle security threats in a very smart and efficient way.

SPECIFICATIONS

Sensor-controlled Switches: One kind of switch will turn the lightbulbs on or off based on the light of the room environment. One other kind will detect people in front of the doors and then send signals to Automated Door Control components to open or close the door.

Temperature & Humidity Measurement: Calculate the temperature and humidity of the home environment and display them on a LCD screen.

Automated Door Control: Based on the decision of the sensor-controlled switch, doors will automatically open or close.

Fire & Gas Leak Alert: Detect gas leak or fire, generate alarm and alert the members of the home of the event so that proper steps might be taken to confront that.

Theft Protection & Alert: There will be a Theft Protection mode for all the sensor-controlled switches so that house members can be notified of any intruder and alarms will also go off.

Smartphone Connectivity: All of the components will be connected to the smartphones with which the components can be controlled. Turning theft protection mode on/off or other changes can be controlled via the smartphones.

COMPONENTS

Name	Usage
Arduino Uno	Control other components
LDR 5mm	Sensor-controlled Switch
Sonar Sensor (HC-SR04)	Sensor-controlled Switch
DHT22 Digital Temperature Humidity Sensor	Temperature & Humidity Measurement
LCD Display 16x2	Temperature & Humidity Measurement
Servo Motor SG91R	Automated Door Control
Smoke Sensor (MQ-6)	Fire & Gas Leak Alert
Gas Sensor Module (MQ-5)	Fire & Gas Leak Alert
Flame Sensor	Fire & Gas Leak Alert
Buzzer	Fire & Gas Leak Alert
	Theft Protection & Alert
SIM900 GSM GPRS Shield	Smartphone Connectivity
Arduino Bluetooth Module (HC-05)	Smartphone Connectivity
Android App	Smartphone Connectivity