Arduino Based Home Automation and Security System

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Abstract

Home security systems are designed to minimize the risk of break-ins and protect families from crime. When studying the discipline of modern society, the homeowners are interested on having an Internet based Home Security and Automation systems with reliable method to remote securely. The Arduino Based Home Automation & Security system can recognize as a new approach to the business which will helps to complete the cheaper and most secure system for the modern society.

The developed system is a low cost and flexible home appliances control and home environmental monitoring system. It employs an embedded micro – web server in Arduino Mega 2560. The IP connectivity is established via Ethernet shield for accessing and controlling devices and home appliances remotely. All components can be controlled through a web application called (SmartHomeWeb) or through an Anddroid app called (SmartHome).For the system development process,Arduino, Android, Video Streaming (for monitoring home environment) and cloud based technologies have been used. The Arduino with Ethernet technology is considered one of modern programmable device and utilize from mobile phone and internet.

This framework is intended to help and give help to satisfy the needs of the elderly and the handicapped at houses. The fundamental control system uses an Ethernet shield device gives a wireless access to smart phones and any web browser. The security system includes whole surround of the home. Outside of security system is working as movement detection (by PIR Sensor) and security camera viewer. Using this system, the homeowners can control the appliances (Switch ON/OFF) and awareness of the home appliances Status from anywhere via web application or through android app. And any intruder attacks are detected from sensor and send an email to homeowner with detection time. Further the home owners can monitor the home area from Security camera using video streaming technology in whatever place. This system is designed to control electrical devices throughout the house with ease of installing it, ease of use and cost effective design and implement.

At the end of the development process, evaluation was done using several testing methods, with the help of the other familiar users. The system was deployed with enhancing the processes and performances. And it can be concluded, it has user friendly interfaces and eases of maintenance and cost effective. As Future enhancements, this project can be extended for automatic doors, automatic lighting floor, Garage etc. And also using WIFI Shield, connect the electronic devices as wirelessly.

Keywords: *Arduino Technology, Automation, Security*