

Simulation of home automation using Arduino

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Abstract:- Smart home security control system has become absolutely necessary in day-to-day life. Wi-Fi the main protocol for connecting different devices. IOT is implemented for the operation of collecting and monitoring different sensor data for home security. This project focuses on evolution of home security system which will be wireless and time consuming. Security over a network is achieved using Arduino. This system monitors the status of the house by using sensors of different types. The data sensor is processed by Node MCU and if there is any abnormality found then it will automatically send request to the concerned person about the issue.

Key Words:- Home automation, Arduino UNO, Sensors, Camera of mobile, IOT, Smart security.

1. INTRODUCTION:-

The modern world has become more contemporary due to automation. To control different electronic appliances it is easy to use automation system. In "smart home" the word "smart" means context aware which can be realized using Internet Of Things (IoT). The safety and security of people is the option of advance technology. This project is focused on a system that provides characteristics of Home Automation based on IoT to operate easily, it also includes a camera module and provides home security. With motion sensors the observation is done. At the entrance of the house if the movement is sensed, a notification is sent that contains a photo of house entrance in reality. The owner of the house will receive a notification by Wi-Fi such that app can conduct a notification. To control switching on of lights, fan, door, etc. automatically, we can use this technique. Due to the advantages of automation, the homes of the people will be more spacious and this technique is time consuming. A smoke sensor is also used. If smoke is visible somewhere, it will get detected and alarm will ring which will make the user alert my sending SMS on his/her mobile. When the owner is away from the house, we have to provide information to the owner and make him alert is the main content of this project. By using encryption and decryption of the owner's data it will improve the internet of things network. The present Government of India (GoI) has proposed to develop 100 smart cities across the country which will create a huge demand for smart home automation solutions in near future.

2. RELATED WORK:-

In India since the concept is new, considerable amount of work has been carried out in other countries, where smart homes are already in place. We discuss about acquisition and analysis of sensor data which are going to be used across smart homes. It proposed architecture for extracting contextual information by analyzing the data acquired from various sensors and provide context aware services. The effective power utilization and conservation in smart homes using IoT is done. It uses cameras for recognizing human activities. Arduino operates and controls motion sensors and video cameras for sensing and surveillance. It is useful to recommend the best security features of different protocols and helps choose which protocol to use. Though similar works are carried out elsewhere, authors propose a unique architecture for IoT based home automation using mobiles and Wi-Fi, in order to meet growing needs of the people.

3. BLOCK DIAGRAM:-

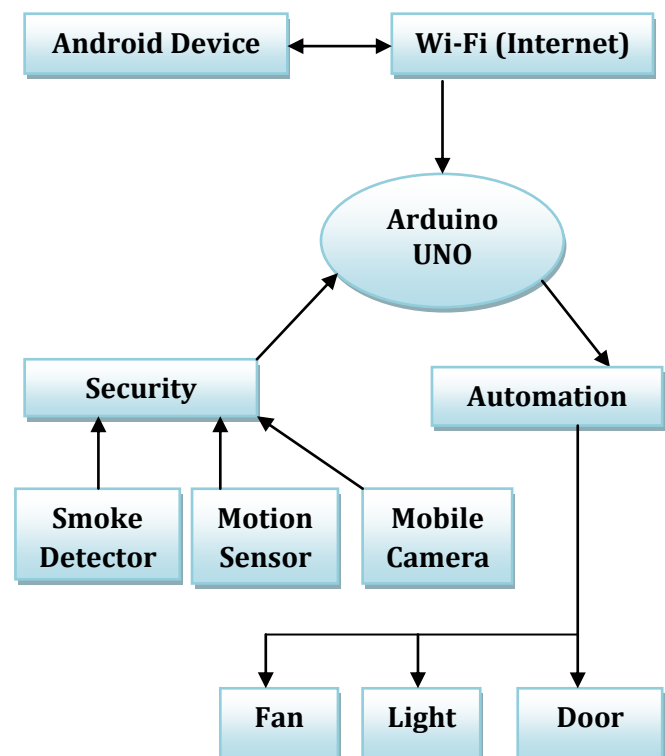


Fig.1: SYSTEM ARCHITECTURE

ANDROID DEVICE: A Smartphone device is a device that runs on the android operating system. Android is an array of software deliberate for mobile devices that mark an operating system, core applications and middleware.

- **WIFI (INTERNET):** A facility authorizes computers, smart phones, or other devices to connect to the internet or communicate with one another broadcast within a specific area.
- **ARDUINO (UNO):** Arduino is an open source electronics platform depend on easy to use hardware and software.
- **SECURITY:** The state of being release from danger or threat.
- **AUTOMATION:** The technique of manufacture an apparatus, a process, or a system operate accordingly. Also automatic is defined as the design and application of technology to monitor and sway the production and delivery of products and services.
- **SMOKE DETECTOR:** A fire protection device that accordingly finds and gives a warning of the presence of smoke is called as smoke detector.
- **MOTION SENSOR:** It is an electronic device that is designed to find and measure movement.

- **MOBILE CAMERA:** A camera phone is a mobile phone which is allowed to capture photographs and often record video using additional built in digital cameras.
- **FAN:** An apparatus with spin blades that design a current of air for cooling or ventilation.
- **LIGHT:** The natural representative that stimulates sight and makes things obvious.
- **DOOR:** A hinged, sliding, or rotate barrier at the entry to a building, room, or vehicle.

4. FLOWCHART:-

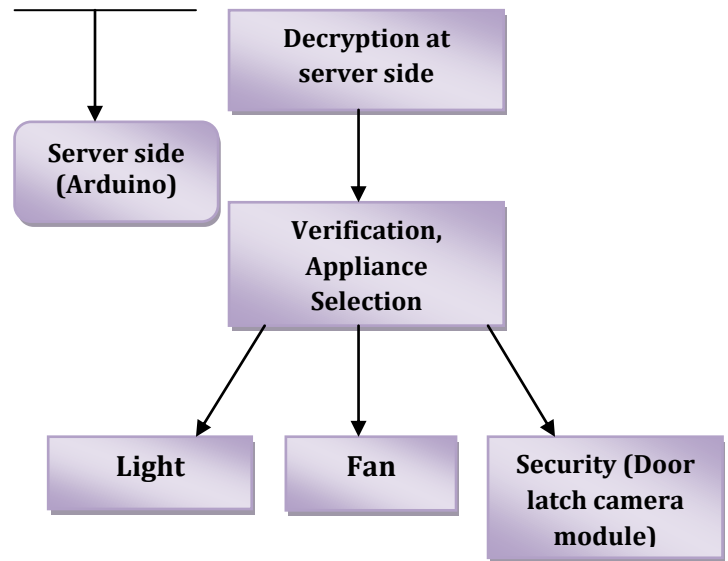
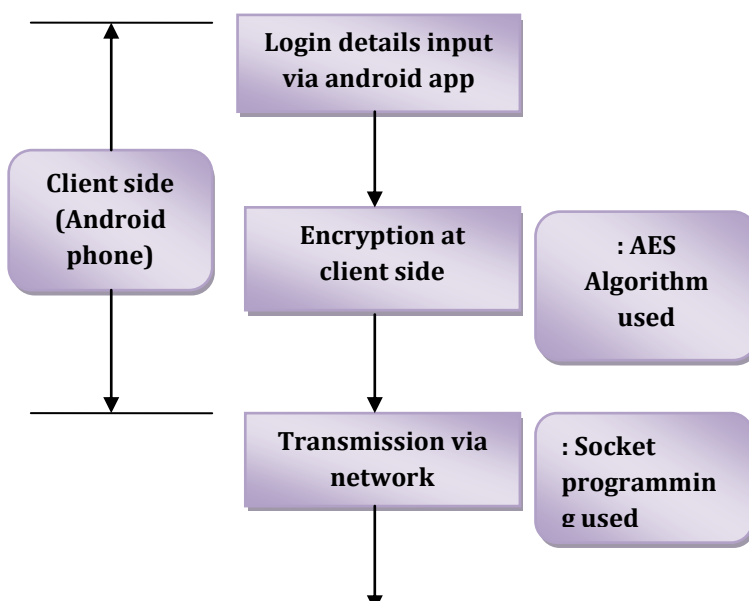


Fig. 2: Flow chart of IOT based smart security system & home automation.

5. ADVANTAGES:

1. It is low cost system with minimum requirements.
2. It takes Care of both home security as well as home automation.
3. More helpful for handicapped and aged people.
- 4.Devices can be controlled from long distance.
5. Highly secured and Time saving.

6. CONCLUSION:-

In this project, we collect data from different sensors for monitoring the current status through IoT. A prototype smart home automation using IoT is presented. This research work will be carried onward by integrating relays to Board of Arduino for controlling home appliances from a remote location is a real scenario. The prime objective of our project is to use an android smart phone to control the home appliances conveniently and to provide home security and safety measures. Any Android based Smart phone with built in support for Wi-Fi can be used to access and sway the devices at home. Authors plan to develop proposed home automation solution so that more number of people can use IOT in a smart environment.

7. FUTURE SCOPE:

In the presence of internet home automation can work properly. The growth of IoT devices brings benefits and is helpful for all. If Wi-Fi is available there is no problem of any issues. In this project, one big advantage is the use of a

camera. It is connected to the microcontroller which helps the user in taking decision whether to welcome the guest after receiving the captured picture of the guest or intruder, If the user comes to know that he is an unknown person then the user can further forward the same photograph to the police station by explaining his situation.

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