
2.1 Background

In recent years lots of work in remote management of building have been done in some developed countries as in USA, German, Japan and South Korean. But in different ways under different names as Smart Home, Intelligent Building, Home Automation, Smart Live.....And so many titles. They differ in two factors , the first difference is the way of connection, some used Direct Wire, Radio Frequency, Bluetooth, Wifi, or the Internet. One of the best ways is the internet because it provides wide communication range.

The second factor is the controller, some used simple Microcontroller, Arduino, and Raspberry pi.

2.2 Previous work

(Shiu Kumar, January 2014) developed smart home system using android application .In the proposed design, a low cost smart home system for remotely controlling and monitoring the smart home environment is presented. An overview of the proposed system architecture is the system consists of an app developed using the Android platform and an Arduino Ethernet based micro web-server. The Arduino microcontroller is the main controller that hosts the micro web-server and performs the necessary actions that needs to be carried out. The sensors and actuators/relays are directly interfaced to the main controller. The smart home environment can be controlled and monitored from a remote location using the smart home app, which will communicate with

the micro web-server via the internet. Any internet connection via Wi-Fi or 3G/4G network can be used on the user device.

(**Dingrong Yuan, Shenglong Fang, Yaqiong Liu 2014**) designed smart home monitoring system based on WiFi electronic trash .The monitoring system was composed of front camera, video signal lines, power cords, video monitor and recorder etc. The camera is used to take analog video signal. Power cords are used to supply power for the system. Transmission signal line is mainly composed of coaxial cable, which is used to transmit cameras real-time video image. Video recorder is used to store the video information. Monitor is used to display the received vide. The algorithms of the system was they used a discard mobile phone carried with camera and Wi-Fi modules as client and discard pc machine as server in the monitoring system, the android phone.

(**Gowthami, Dr. Adiline macriga, 2013**) designed Smart Home Monitoring and Controlling System Using Android Phone. The physical parameters such as Temperature and Gas for kitchen, light and fan for bedroom, obstacle sensor were used as some important places and the human healthcare should be monitored. For this thing they used three sensors, LM35 sensor was used for temperature. LPG (liquefied petroleum gas) was used for gas. GP2D12 was used for measuring the human movement. The sensor node is responsible for gathering, processing and transmitting the measurement data to the local home monitoring server with embedded web support. The local monitoring

server sends the home appliance output using graphical user interface to the android phone, Wi-Fi network is used as the communication between local monitoring server and the android phone.

(C.Bruhathireddy, Dr.G.N.Kodandaramaiah, M.Lakshmipathy 2014) designed a home automation system using raspberry pi . The projected home automation system was functioning with very hip humanoid phones. It's having chiefly 3 components; the humanoid enabled user device, a LAN router having a decent ascendable vary, and a raspberry pi board .Here the users have provision to regulate the house appliances through humanoid enabled device. This can improve the system quality since there's no would like for a wired association, net etc. The directions from the user are transmitted through the LAN network. The raspberry pi board was organized in step with the house system and it'll change the relay circuit as per user request. The relay circuits will management the house appliances additionally. They added appliances to the system can also add extra security measures. The main objectives of the projected system was to style associate degreed to implement an inexpensive and open supply home automation system that's capable of dominant and automating most of the house appliances through an humanoid device

(Mohamed Abd El-Latif, Ahmed Fathy, Ahmed Hafez ,2014) designed Smart Home Automated Control System Using Android Application and Microcontroller . in this design Smart home appliance

is an interface between the remote control with its mobile or remote control and a home reliever. For each device, in order to accomplish this interface design process was taken using the micro controller and arduino for controlling some application in the home manually by using a remote control and automatically through different sensors. They used a different types of micro controllers which are (PIC30f4013-PIC 16f627A- PIC12f652- PIC18f, arduino), secondary connectivity between remote or smut phone and micro controller was established through (RF wireless and Bluetooth) modules. The two previous modules can be connected either to micro controller or arduino. A specific android application had been designed such that different home electronic devices can be controlled using a smart phone remotely

(Rajeev Piyare and Seong Ro Lee ,2013) designed Smart Home Control and Monitoring System Using Smart Phone The system consists of a micro Web-server based on Arduino Ethernet, hardware interface modules and the Android compatible Smart phone app. The architecture presented in this work can be customized in different ways in order to accommodate different application scenarios with minimum recoding and design. The architecture was divided into three layers: home environment, home gateway and remote environment .the Software of the proposed home automation system was divided into two parts: server application software and microcontroller firmware. The server application software was a library implementation of a micro Web-server running on Arduino Uno using the Ethernet shield. To

successfully communicate between remote user and the Home Gateway. The Smart phone app for home control and monitoring applications provides the following functionalities to the user: 1) Remote connection to the Home Gateway. 2) Device control. 3) Device Monitoring. 4) Managing schedule.

(Xin Zhenghua , Chen Guolong , Hong Li , Qixiang Song , Liangyi Hu , Chen Lei , Mao Youwen , Xu Yexiang , 2014) designed smart home system based on the IAP15F2K61S2 and GSM . The system was consisted of the master chip IAP15F2K61S2 module, the GSM module, the Smoke sensor module, the clock module for timing, the wireless data transmission module using the 24L01, the power supply module of the system, 8 * 8 * 8 Light Cube module, the key module, the color display module, the temperature sensor module, the charged lights module, the charged heater module, the charged fan module and the charged MP3 module. The GSM module and the wireless communication module based on 24L01 receive commands from the microcontroller for data processing to achieve mutual wireless communication between the various modules. This makes the system more intelligent. The architecture of the system Dual control for the electrical devices includes the short message service (SMS) control and the manual control. The charged appliances not only retain the traditional manual control. But also they are able to be controlled by the mobile phone text messages wirelessly. The intelligent remote control can collect and display the status of each electrical appliance. When the

system has powered up, the status of every charged appliance has been detected automatically.