A Survey on: "Control Electric Devices by using Android Phone"(HOME AUTOMATION)

Shubham Jagtap[1], Sahil Chavan[2], Prof.Pawar S.D[3]

Department of Computer Engineering, SPCOE, SomeshwarNagar, Baramati, Pune, Maharashtra, India[1-2]

Guide, Department of Computer Engineering, SPCOE, SomeshwarNagar, Baramati, Pune, Maharashtra, India[3]

Abstract: This paper presents a low-cost flexible and reliable home monitoring and control system with additional security using ESP32, with IP connectivity through local Wi-Fi for accessing and controlling devices by formal user remotely using android smart phone application. This system is server selfgoverning and uses internet of things to control human desired appliances starting from industrialized machine to user goods. Home monitoring and device control system not only refers to decrease human efforts but also save the energy and time competence. To demonstrate the effectiveness and feasibility of this system, in this we presents a home monitoring system by using ESP32 module. It helps the user to monitor various conditions in the home like room temperature, gas leakage, water levels in the tank and person detection and control various appliances such as light, fan, motor, gas knob and take decision based on the feedback of sensors remotely.

Keywords: ESP32, Internet of Things (IoT), Wi-Fi network, PIR (passive infrared) sensor

I. INTRODUCTION

The day by day innovation improved from automatic machine to customer products. IoT is another pattern advancement that empowers us to screen and control hardware devices through the web. Here we propose to use IoT in order to screen and control home apparatuses, in this way computerizing present day homes through a web. This proposed framework enables a consumer to effortlessly control these home apparatuses through the web. The undertaking proposes a capable usage for IoT utilized for checking and controlling the home apparatuses by means of World Wide Web. Home robotization framework utilizes the reasonable gadgets as a UI. They can likewise speak with home computerization organize through an Internet access, by strategies for low power correspondence traditions like Zigbee, Wi-Fi, etc. This endeavor goes for controlling home machines by methods for Smartphone using Wi-Fi as correspondence tradition and raspberry pi as server structure. The IoT based Monitoring and Controlling System for home is a progression which can control and screen gadgets not just for home mechanization but any real life appliances remotely. It provides facility to have control over a wide range of home appliances and ensure securities.

In this project we presented implementation of home automation system through the Wi-Fi module, Massachusetts Institute of Technology (MIT) app. and Webpage server using ESP32. This project monitors all home appliances such as light, fan and controlled based on the threshold value programmed in the ESP 32. The System is low cost, allowing additional home appliances. Home monitoring and device controlling without involvement of humans the system can be control the devices, So that we can save the time and energy levels. So now we have introducing this system. The fig.1 shows the architecture of the system here we are using the four sensors and four devices for the home appliances for monitoring and controlling devices for the home respectively. The data can be sending to open source cloud storage for the store the data and use the MIT app Inventor for display the status of the sensors

II. LITERATURE SURVEY

1] Internet of Things Based Home Monitoring and Device Control Using Esp32.
Authors**:** V. Pravalika, Ch. Rajendra Prasad

Description**:** the authors presented design and development of control of home appliances system through the Wi-Fi module, webpage server and Arduino.

The user communicates with arduino through internet via Wi-Fi network. In Based on SMS/GPRS cell phone and inserted module including oneself sorted out home computerization framework, it tends to be coordinated to permit the client end to screen and control the gadgets for the home apparatuses by means of sent the message however the portable phone.

2] Smart Energy Efficient Home Automation System Using IOT
Authors**:** Asst. Prof Shaik Fareed Ahmed, Mohammed Abdul

Description: In This Paper ,Human-machine interaction (HMI) has become, the more realistic in day-to-day life due to the advancement in the technology. Today, HMI research has moved one step ahead and switched on to the Internet, which was previously used for communication and now used for things, i.e., IoT (Internet of Things).

3] SMART HOME ENVIRONMENT FUTURE CHALLENGES AND ISSUES - A SURVEY
AUTHORS**:** SATHESH, YASIR BABIKER HAMDAN.

 Description**:**In This Paper The development of the IoT is mixed with many factors and smart sensors. The data is exchanging between the various sensors and home automation system to user mobile devices .

4] Smart Home IoT Sensors: Principles and Applications A Review of Low-Cost and Low-Power Solutions.
Authors**:** Alexandros Gazis*, Eleftheria Katsiri

 Description**:** In this paper, The first refers to large interconnected networks of computer devices (e.g. sensors) which can rapidly exchange vast amount of information. The second refers to the technical education that people will need to acquire to benefit from the endless capabilities of autonomous devices.

5] Control of Home Appliances using IoT
Authors**:** S. Dey, A. Roy and S. Das

Description**:** In This Paper, All these are connected using Wi-Fi mesh. The devices can be accessed through a webpage from any device. The mesh protocol is one of the safest and most reliable protocols for our system. It allows us to connect all the devices to each other.

Problems with existing system:

Home automation refers to control the home appliances by using computer technology. Computer Systems enables From remote control of lighting through to complex micro-controller or computer-based networks with various degrees of intelligence and automation. Home automation provides security, energy efficiency and ease of use hence, it is adopted more. It also provides remote interface to home appliances to provide control and monitoring on a web browser The proposed system block diagram as shown in fig.2.

The system consists of two major parts:

(i) hardware implementation and (ii) software implementation.

There are different sensors are used in the block diagram they have similar operation but has different working principle. These sensors are individually connected to the esp32.we are using the 4-channel relay for connect the different devices.

III. METHODS AND TECHNIQUE

Relay Module: In this project relay is an important component and which is employed to control high voltage home appliances. We employed 5V four channel relay to control four appliances. This is having four controlling inputs, Vcc, GND and four outputs. The outputs of relay are connected to four appliances and these are controlled by using control inputs which are connected to four digital output pins of ESP 32.

ESP32: It is a less-cost, little power system on a chip microcontroller with included Wi-Fi and dual mode Bluetooth. The ESP32 is the heart of the project. It is a microcontroller board used to connect all the sensors. The board is programmed with the source code in order to perform the operations of the project.

The source code is stored in the on-chip memory available on the ESP32. This block can be considered as an interface between the programmer and the user. So, it is considered as the heart of the project. The ESP32 operating voltage range is 2.2 to 3.6V. Under normal operation the ESP32 thing will power the chip at 3.3V.

IV. PROPOSED SYSTEM

In Proposed system The system consist of a four sensors temperature sensor, PIR sensor, gas sensor, water level sensor and using the ESP32 module. By using an IoT the ESP32 send the commands to cloud storage things speak. The cloud storage things speak it will receive the commands and shows the response.

The system it is also using the MIT app inventor it shows the sensor status. When the internet is not available the system uses the buzzer it will give audio signaling when the water level reaches the threshold value and when the person entering into the home.

The planned framework screen the sensor information, similar to temperature, gas, light, movement sensors, yet additionally activates a procedure as per the prerequisite, for instance exchanging on the globule when it gets dull.
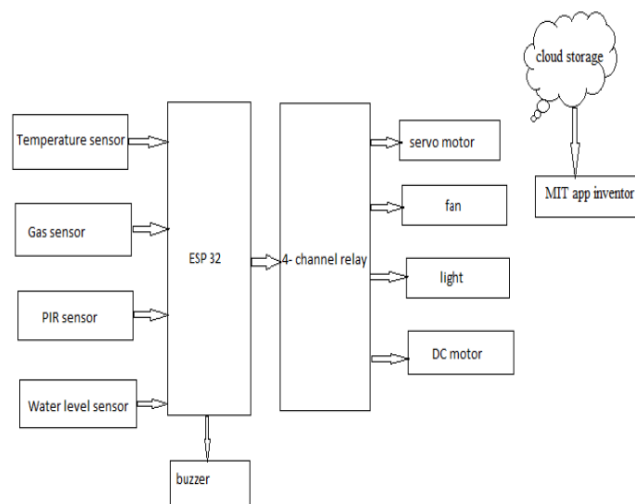

Fig.2. Block diagram of the proposed system

The software implementation of the proposed system. This system monitors the temperature value, water level in the tank, gas leakage and person detection values. If the temperature value exceed then the threshold value fan on else fan off the value store in the cloud.

If the water level reaches the threshold value turn off motor or buzzer on the values stores in the cloud. If when the gas leaks in the home turn servo the values store to the cloud. If the person is detected buzzer on goes to cloud else the value store in cloud. The values should be display on the MIT app inventor (dashboard).

V. CONCLUSION AND FUTURE WORK

We presented a system which can monitor and control multi devices at home using IoT.This proposed system improve the performance of various devices at home by controlling automatically and remotely. The system works in three phases. In first phase the system monitors temperature, gas leakage, water level of the tank and person detection and upload the data to cloud (things speak) and mobile app (MIT app inventor).

In second phase the system automatically controls the motor pump and gas knob when water level reaches the maximum and gas leakage detected respectively. In third phase user can control home appliances like fan, light etc using mobile app. The system in build using low cost embedded microcontroller with WiFi module ESP32.The developed system cost is low, simple to operate and is easily embedded with home appliances..

Future Scope:

1. Make Life Easy
In future work, we will design new approach to saving the time and money.

REFERENCES

[1]. M.Tazil, R.Piyare "Bluetooth Based Home Automation System Using Cell phone," in IEEE 15th Int. Symposium on Consumer Electronics, Singapore 2011, pp. 192 - 195.

[2]. Md. Abdullah Al Asad, Md. S. Faruk. Design and Development of SMS Based Wireless Home Appliance Control and Security System. JMST, Vol.3. No.1. Mar. 2015, Issue. pp.80-87.

[3]. N.Deepak, Ch. Rajendra Prasad " Patient Health Monitoring using IoT", IJITEE, Volume-8 Issue-2S2 December-2018.pp. 454-457.

[4]. V. Madan, Reddy S.R.N "GSM-Bluetooth based Remote Monitoring and Control System with Automatic Light Controller", Int. Jr. of Computer Applications, Vol. 46, No 1, pp. 20-28, May 2012.

[5]. D. Javale, M. Mohsin, "Home Automation and Security System Using Android ADK", Vol. 3, Issue 2, pp 382-385, Mar. 2013.

[6]. B.M.O. Al-thobaiti, I.I.M. Abosolaiman "Design and Implementation of a Reliable Wireless Real-Time Home Automation System Based on Arduino Uno Single-Board Microcontroller", Vol. 3, No. 3, pp 11-15, July 2014.

[7]. Diptanil Chaudhuri "GSM based home security system" IJETR, Vol.3, Issue-2, Feb. 2015.

[8]. Safa.H, Sakthi Priyanka," IOT based Theft Premption and Security System", Int. Jr. of Innovative Research in Science, Engg. and Tech., vol 5, pp. 4312-4317, Mar. 2016.

[9]. Pandav R.P., Dahatonde S.P " Security System And Home Appliances Control Using IoT" IJARIIE Vol-4 Issue-2 2018.

[10]. O.Anusha, CH. Rajendra Prasad" Experimental Investigation on Road Safety System at Crossings " IJEAT, Volume-8, Issue-2S2, January 2019, pp.214-218. 11. K. Bharath Reddy and Ch.Rajendra Prasad, "The embedded Web server based Electrical Ethernet Monitoring system using ARM," Int. Jr. of Adv. Research in Comp. & Comm. Engg. Vol. 2, Issue 5, 2013, pp. 2292-2295.