

Human Machine Interface Using IOT

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Abstract: Internet of things (IoT) is a system of physical things embedded with sensors, software, electronics and connectivity to allow it to perform better by exchanging information with other connected devices, the operator or the manufacture.[1] In this paper, we are developing a system which will automatically monitor the industrial applications and generate Alerts/Alarms or take intelligent decisions using concept of IoT.[2] Safety from leaking of raw gas and fire are the most important requirements of home and industries security system for people. A traditional security system gives the signals in terms of alarm.

Keywords: The main goal of our project is to create an automation system using an Ada fruit server and Node MCU to control and monitor environmental data.

I. INTRODUCTION

The Internet of things is a technology to form a new and create intelligence of physical devices such as vehicles, buildings, and other items embedded with electronics, software, sensors, actuators, and network connectivity that enables the objects to collect and exchange the data. The IoT allows objects to be sensed and controlled remotely across the existing network infrastructure, and accuracy and economic benefit and reduced the human intervention.[3] As we are making use of Internet the system becomes secured and live data monitoring is also possible using IoT system. Within industries the various hazardous gas are being processed, hence to provide security to those employ working within those industries, it becomes important issue to work on their security, If leakage of gas takes place then these system alerts by turning ON alarm which notifies the employers. This system also helps us take some crucial decision from any point of the world within internet network. Wi-fi shield is being used to act as service point between network and connecting network.

II. LITERATURE SURVEY

The Industrial Automation Using Internet of Things (IoT) In this paper, they are developing a system which will automatically monitor the industrial applications and generate Alerts/Alarms or take intelligent decisions using concept of IoT. RASPBERRY PI AND IOT BASED INDUSTRIAL AUTOMATION. IOT is achieved by using local networking standards and remotely controlling and monitoring industrial device parameters by using Raspberry Pi and Embedded web server Technology. Raspberry Pi module consists of ARM11 processor and Real Time Operating system whereas embedded web server technology is the combination of embedded device and Internet.

III. METHODOLOGY

The main goal of our project is to create an automation system using an Ada fruit server and Node MCU to control and monitor environmental data. The core of the system is the MCU, which connects the hardware components of a circuit to the IoT platform. The GPIO pins of our node MCU are connected to the relay module as well as to the humidity and temperature sensors (DHT11).[4]

The DHT11 is a basic, ultra low cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermostat to measure the surrounding air, and spits out a digital signal on a data pin. It is simple to use, but requires careful timing to grab data. DHT11 is connected to pin no. D3 of our MCU node. It receives the DHT11 signal pin data and sends it to the adafruit server via the MCU node. Where these information is indicated with the indicators. [Write an appointment of the document or the summary of an interesting point. You can place the text box anywhere in the document. Use the Drawing Tools tab to change the format of the extraction appointment text box.[5]

The relay driver is now connected to pin no. D0 and D2 are the MCU node. The relay acts as a switch to control high voltage electrical devices (lights, fans, TVs, etc.). These relays are activated via the sources present in the dashboard of the Adafruit server. And we can access it simply by enabling / disabling the feed from the Adafruit server control panel.

Google Assistant, you can also access sources and use Relays / Exits with the Google Assistant, where you can access automated devices using voice recognition.

IV. SOFTWARE AND HARDWARE USED

The main software used in our project is Adafruit, which is used as an IoT platform to access devices via the Internet. The other software used is Proteus for PCB design. To dump the program into the MCU, we used the IDE Adriano (integrated

development environment).[6] We also used google ifttt to access automated devices through the Google Assistant using the "OK GOOGLE" command. We use Google Assistant to manage automated devices via voice recognition of the Android system microphone.

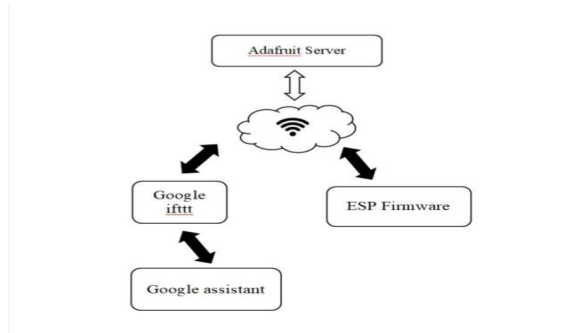


Fig.1: Software Flow

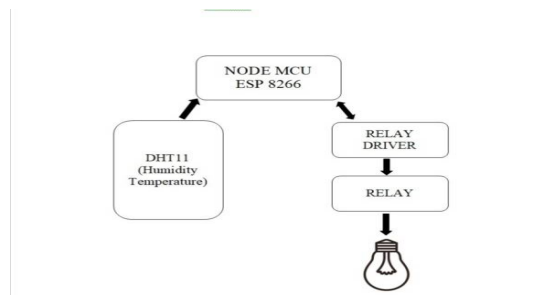


Fig.2: Hardware Flow

A. Mobile Application

This is an Android application installed on the smart phone of the owner of the house, which allows to manage the remote home automation system.[6]

B. Cloud-Based Server

The cloud functions as a database to store all the data generated by the sensors installed at home. This server in the cloud helps the customer to send e-mail alerts about different situations at home.[6]

C. Sensors

A sensor is a device that detects and responds to an input type of the physical environment. In this type of different sensors, temperature sensors, motion sensors, smoke and gases are used to detect changes in environmental phenomena and send the data to the Adriano device.

V. CONCLUSION

We conclude that by implanting this system we can access the live data and also control the device interfaced with our system.

VI. RESULT

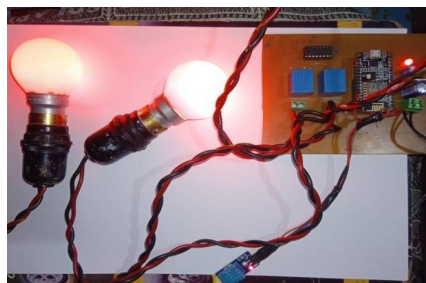


Fig.3:Hardware Output

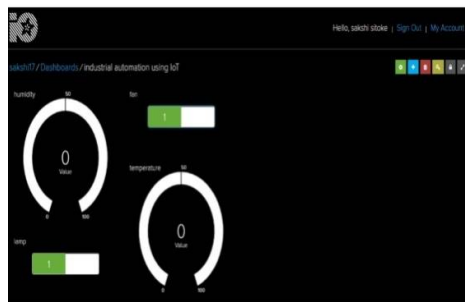


Fig.4: Adafuit Dashboard Output

REFERENCES

- [1] Android based Home Automation Using Raspberry Pi, by Shaiju Paul, Ashlin Antony and Aswathy.B, IJCAT International Journal of computing and Technology, Volume- 1, Issue1, February2014.
- [2] Design and implementation of home automation system using raspberrypil by Bruhathi reddy, Dr.G.N.Kodandaramaiah, M.Lakshm-ipathy. International Journal of Science, Technology and Management, www.ijstm.com, Volume No.03, Issue No.12, December2014, ISSN: 2394-1537.
- [3] Home Automation System (HAS) using Android for Mobile Phone by Sharon Panth, Mahesh Jivani. International Journal of Electronics and Computer-Science Engineering. Available Online at www.ijecse.org.ISSN:2277-1956.
- [4] Bluetooth Remote Home Automation System Using Android Application", by R.A. Ramlee, M.H. Leong and R.S.S. Singh, the International Journal of Engineering and Science, Volume-2, Issue 01, Pages: 149-153, 2013, ISSN: 2319 – 1813, ISBN: 2319 – 1805.
- [5] YoonD., BaeD., Ko H. and Kim H., "Implementation of Home Gateway and GUI for Control the Home Appliance", The 9th International Conference on Advanced Communication Technology,PP.1583-1586,2007.
- [6] R. A. Ramlee, M. H. Leong and R. S. S. Singh, "Bluetooth Remote Home Automation System Using Android Application", International Journal of Engineering and Science, Volume-2, Issue 01, Pages: 149-153, 2013, ISSN: 2319 – 1813, ISBN: 2319 – 1805.