Intelligence of IOT for Smart Home Automation using Arduino

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Abstract— Now a day the embedded system and Internet of Things (IoT) has been a most popular research area. The embedded system which is assembled and developed for the dedicated tasks and the IOT where many things are connected to each other for communication are facing many technical and application problems. As this project is concern with the Arduino, Arduino is an open source computer hardware and software combinations developed for doing dedicated task with low computing power and low energy consumption. The objective of the survey is focused on the loopholes arising out of information exchange technology used in internet of things and embedded systems. Finally, the important research issues are addressed for the researchers to find the way for further research in the embedded system.

Key words: Smart Home Automation, IoT

I. INTRODUCTION

The importance of the embedded systems has been recognized by open source industrial leaders and the social media as the new way of innovation and how to make our daily life easier. The sensors mounted in the environment plays the vital role of sensing the environment i.e. the physical things get measured into the digital and analog readings. Embedded systems always try to attempts the user need and make their work easier.

Home automation is all about making your house smart. Just the same as with people, for a home to be smart it needs information. This information can come from you in the form of programs and commands, but often it will be collected directly by your home using sensors and used for automated functions. Sensors are therefore the foundation stone of any home automation system.

Arduino is an open source computer hardware and software company, project and user community that designs and manufactures microcontroller based kits for building digital devices and interactive objects that can sense and control objects in the physical world.

The project is based on microcontroller board designs, manufactured by several vendors using various microcontrollers.

The systems mounted in the house, plant, industrial automation and smart city infrastructure are interconnected to the internet. The information sensed by the sensor is get collected, aggregated and then afterword used for various operations as the input to the system. Sensor can provide the data as status of device, environmental context, level of liquid, energy usage, direction, pressure, temperature and much more. The sensors and actuators can be controlled any time and from any location.

II. LITERATURE SURVEY

Using a high computing power microcontroller for a lightweight task is not affordable these days in the age when people converts to the embedded and ubiquitous system. Using a microcontroller having high computation power for a low process is not efficient in terms of computation power and energy consumption. Using high computing power microcontroller like raspberry pi or processors involves a lot of power to be wasted. To operate these processors or the microcontroller most of the times an operating system is required which calls for the hosts to be extremely complicated system. The idea of this project was taken, looking at the problems faced in daily life of Users to do a task and give a special time to perform a task. The important thing comes in mind that if we can make a assembly of software and hardware that can perform task for us then why should we waste our valuable time in doing such things. Challenges in Smart Home Automation is:

- Power efficiency
- Reliable
- Performance
- Level of smartness

A. Power Efficiency

There are many products are available in market which can makes your home automated but the amount of power required to carry out operations is very high. Lots of power gets wasted during the operation preformation.

B. Reliable

During surveying about project we understand that there are many products or existing system available which can made home automated easily but there is no reliability that any person or user can fully rely on it.. And the devices which are available they are working on high computation power supply. In existing system if the power gets off then there no a rescue plan for that, so Reliability cannot be achieved.

C. Performance

Performance which mainly related with Time taken by system for sensing, taking decision and perform action. The products which are available in market they are time consuming. Or they can't transmit a large data in just small amount of time. So the device's transmission capability is low and also it takes lots of time to transmission of data. So performance is another issue.

D. Level of Smartness

The level of smartness should be maintaining because there are so many products which are competing each other's in the issue of smartness. There are some situations like whenever there is no one in the automated room, the system will identify the situation and should turn off the lights and other equipment's. But in existing systems this facility is not available. If some unwanted motion gets detected, then CCTV camera should capture that instead of remain active at all the day.

III. SUMMARY

This paper presents the general survey of all the issues addressed in the Home Automation System (HAS). In order to accomplish this task, we have taken 10 research papers related to the Home Automation and IOT.

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