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IMPLEMENTATION OF HOME AUTOMATION WITH RASPBERRY PIE AS POSC APPROACH WITH IOT

K. Anilkumar[*1] & Dr. Chandrashaker. Pittala[2]

[*1]Research Scholar, Department Of ECE, Himalayan University, Itanagar
Papumpare, Arunachal Pradesh- 791111

[2]Professor in ECE, MLR institute of Technology, Hyderabad, Telangana– 500 043

ABSTRACT

Today's home automation technology is constantly improving flexibility by combining modern functions with the growing demands of the community. This document represents the design and implementation of a new home automation system that uses cloud computing as a service. The proposed system consists of three main components; the first part is the cloud server, which manages and manages user data and the state of information and equipment. The second part is a hardware interface module that provides the right interface for sensors and actuators that provide physical services. The third part is Home Server, which configures the hardware and provides the user interface. This document is intended to implement web services via the cloud, which in principle requires security and data availability. The proposed system is cost effective, easy and reliable and also offers a secure home automation environment for the whole family.

I. INTRODUCTION

Home automation fig 1 gives you control over lighting, heating, ventilation, air conditioning equipment, overlays, curtains, security locks and other systems by simply touching your smartphone. The main goal of this project is a convenient but flexible, adaptable and secure home automation system. The main goal of domotics is to help disadvantaged citizens and enable older people to equip and control equipment and to raise alarms in critical emergency situations. This system supports the wide range of security, multimedia and telecommunications applications. Typically, domotics systems are divided into two categories: local remote control system and operating systems. Localized control systems consist of an internal controller for domotics. It enables users to obtain full coverage of their automation system from their home via a station or a wireless interface. Remote control systems are used via an Internet connection or integration with an existing home security system, allowing the user to complete control of equipment connected to the system from their mobile device, personal computer, etc.

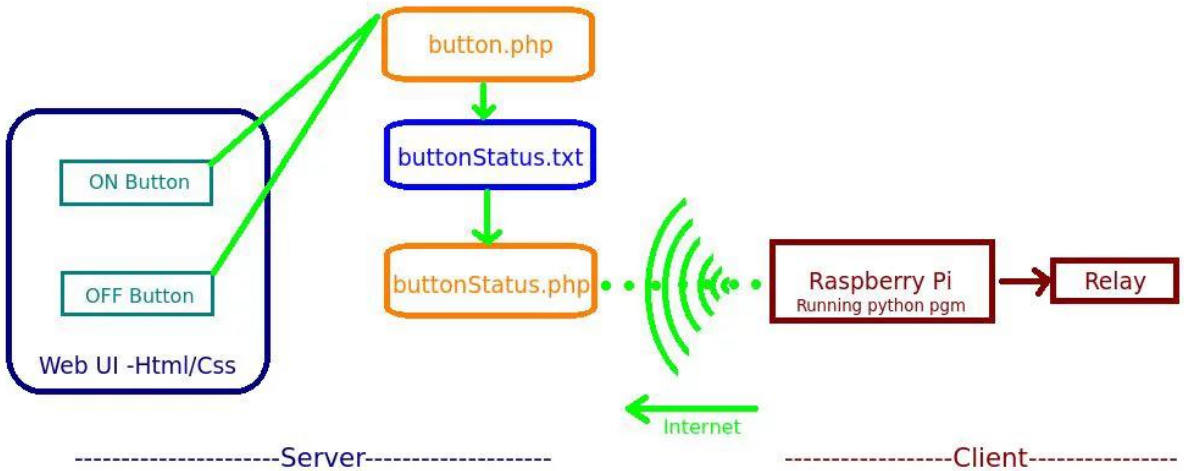

Fig 1: Architecture of

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1.1. Definition of the problem

Many people move from one place to another continuously because of the requirements of the company. Some people can spend a few days away from home and leave all their devices without any control and control. There are different devices in the sockets, although others have to be in and out of the sockets at different intervals depending on the weather. All this requires that all devices are maintained independently from time to time. All these monitors and controls can be made without having to be in or around the house. In some devices, unless they are checked, a lot of energy has to be used as a result of extra electricity expenditure. Therefore, a home based home automation system is recommended that allows the person to manage their equipment / distance from anywhere and at any time.

II. SURVEY LITERATURE

According to the survey, there is no system with cheaper rates. There are several difficult to install systems that are difficult to use and maintain.

Anindya Maiti introduced domotics as design [1] design and implementation. It stimulates domotics as a cloud computing service, which helps to prevent the computer system's load.

EIKam chouchi is responsible for the design and prototyping of home automation based on text messaging. The GSM model uses SMS technology to exchange data and characters between users and a home automation system [4].

Darshan Sonar has developed an application for domotics using cloud computing and mobile devices [3]. The system allows the user to control devices and lighting at home from smartphones and computers from anywhere in the world via an internet connection.

Alexandru-Corneliu Olteanu designed a home automation system using a Zigbee protocol [2]. It can communicate with a domotics network via an internet gateway, but network devices can not be connected directly, usually as the application of the low-power communication protocol, such as Zigbee. So, research some methods to equip the Android device with Zigbee Dongle communication.

Mohd. Mohsin proposed a design for home automation and a security system with Android ADK. The devices are connected to the ADK and there is communication between the ADK (Access Development Kit) and a mobile device or an Android tablet.

III. IMPLEMENTATION PROCESS

Figure 2: Raspberry pie

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In the computer, a serial port is a serial portable communication interface through which information transfers are performed in one or more bits. In most cases, however, only one device can be controlled via this mechanism. This is a major weakness in village communication. The other limitation of this mechanism is to link the hardware device requirements to the other end to synchronize the communication. This is another disadvantage in communication with serial ports.

Communicate via the parallel port. This is similar to the serial port, but this communication synchronization mechanism does not require additional hardware because the data is already synchronized through these ports. However, there is a limit to the number of types of equipment that can be connected to this port. And parallel ports can not tolerate uncontrolled input. This mechanism is a big weakness.

3.1. Communicate via the network

This mechanism communicates via the network with network cables and switches. This support is accurate because the equipment can be distinguished with unique IP addresses assigned to them and also does not limit the number of devices that can connect. Although this mechanism requires the wiring of the equipment to the computer at home, this can be prevented by using an EOP (Ethernet over power) mechanism. Powerline Ethernet works on residential power lines using the Wire Carrier Tender Access to Avoid Collision (CSMA / CA) protocol to complete arbitration shared media; a physical layer designed for transmission through electrical wiring. To use this mechanism, equipment cabling can therefore be avoided in the home system.

The software interface is intended for the system of Java RxTx libraries.

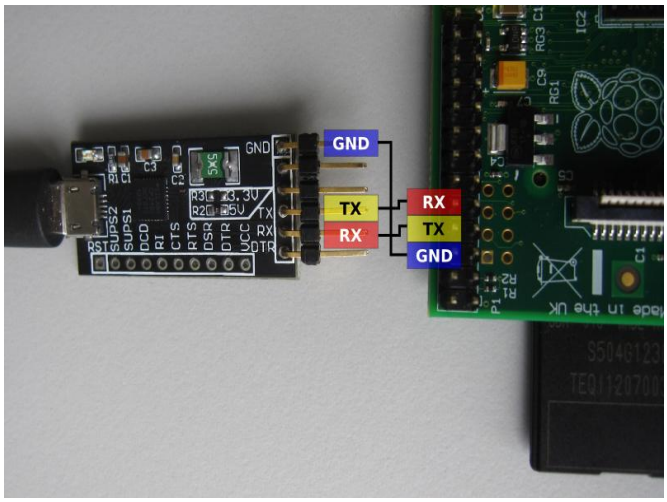

Figure 3. RxTx communication

RXTX is a native book that provides serial and parallel communication with Java development tools (JDK). All LGPL licenses are all applicable. It has been charged for a GPS application. Communication support was not minimal and favorable. The hope was that support for serial communication would improve by sharing the code with other developers. Since then the sun has produced the CommAPI and RXTX has been transferred to support this standard. The code for sharing seems to have worked. The library offers the most functionality of CommAPI and works much better than the first shared code.

3.2. Cloud Services

The friction described the variety of computer concepts related to the number of computers connected to a real-time communication network such as the internet. In science this is cloud computing for the distribution of computers in a network and it means the possibility to simultaneously run a program or application on multiple computers. Service

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as a service, service platform and service infrastructure is the most important model of the cloud-based computer service.

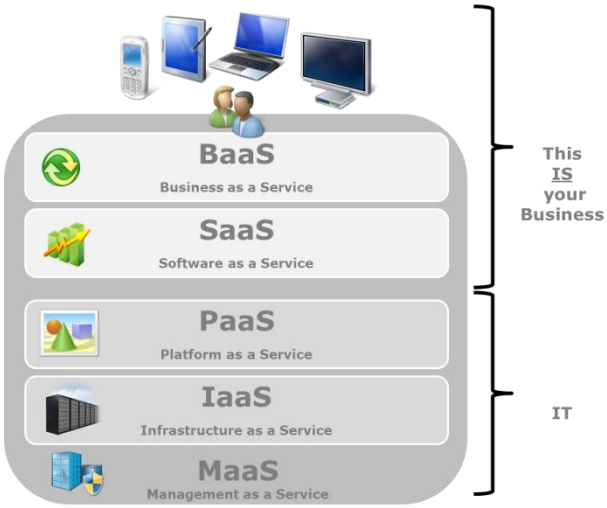

Figure 4: cloud services

3.3. Software as a service

Software as a Service (SaaS) is defined as software distributed via the Internet. SaaS offers a customer application as a service on demand, per subscription, in a "pay-by-go-go" model or (more) without commissions when there is a possibility to generate income from different flows of that user, for example advertising or selling user lists. SaaS is a fast-growing market, as shown by recent reports that have experienced double growth. This rapid growth shows that SaaS will be the first in any organization and that is why it is important that buyers and users of technology understand what SaaS is and where it is suitable [6-9].

3.4. Architecture

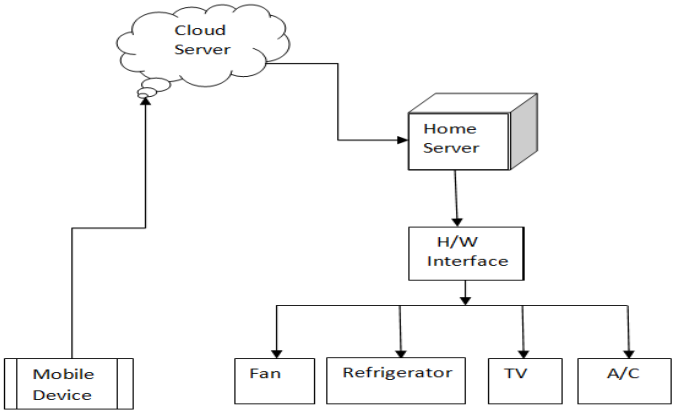

Figure 5: HAS architecture

3.5.Overview of the recommended system

As stated in the proposed home automation system, there are three main modules, the server, the hardware interface module and the software package. The interface and the hardware module use the serial port to communicate with each other. The user can use the internet to access the web server service, so that external users can access the server via the Internet via a compatible web browser. The proposed system has been implemented using JSP, HTML and CSS. The server application is applied to JSP and Java, but the application of the integrated hardware interface is applied using the C programming language[10,11].

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3.6. System deployment plan

The system consists of different client modules for different platforms.
Cloud Server. A central server that deals with providing services to other submodules. The central server acts as a respiratory system of the brain and data. It offers three interfaces with the three submodules, the mobile visa, the web configuration and the home system. The server analyzes the received data from the house, updates the phone and vice versa[12]. The server encounters the database and is updated according to the changes at the end of the home page. Integrated program for microcontroller and steel hardware. Internet client for every mobile phone or office.

IV. APPLICATIONS OF IOT

Home automation makes your home safer: it seems to us that crime is increasing, families are starting to buy security alarm systems for their homes. Home automation adds an extra sense of security to your home, using an automation system, you can monitor your home security camera with an external device[13-16]. You can receive e-mail notifications or messages when your alarms are enabled / disabled or enabled. Home automation saves money and energy: home automation systems are designed not to consume a lot of electricity, adding bonuses to a home automation system. You can plan your home's lighting to turn it on and off at certain times of the day. Using an external device, you have remote access to all lighting or electrical devices fig 5. Home automation is ideal for parents: if you have a newborn or toddler at home, a home automation system is perfect for parents. You can be anywhere in the house and continue to follow your child to other parts of the house using cameras installed in different rooms.

Home automation systems are all in one easy-to-use system: for every technology fan, it's the highest device. By pressing a button on an external device, the user can adjust the exposure,
Air conditioning system, audio and video camera and video security.

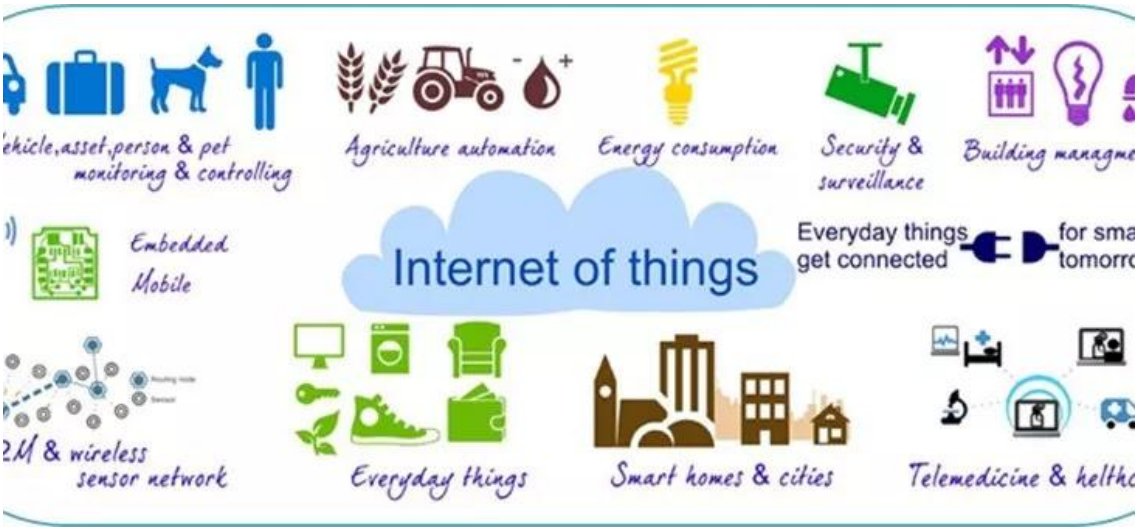

Fig 6: IoT Applications

V. CONCLUSION

We offer a scalable architecture, using external access, different communication channels, and different ways to offer functionality to multiple user interfaces. We hide the complexity of ideas associated with home automation systems by including them in a simple but comprehensive set of concepts. That's why we've developed an Internet-based automation system that lets you manage equipment anytime, anywhere. We recognize the hard work and hard

work of the experts who have contributed to the development of various home automation systems. We also recognize magazine reviewers for their suggestions and adjustments to improve the quality of paper.

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