

Smart City Using Ubiquitous Computing

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Abstract: Internet of Things (IoT) is extension of current internet to provide IoT is a very complex task, mainly because of the extremely large variety of devices, link layer technologies, and services that may be involved in such a system. The project proposes an efficient implementation for IoT (Internet of Things) used for monitoring and controlling the smart city appliances via IOT. In this paper, we focus specifically to an smart city IoT system that, while still being quite a broad category, are characterized by their specific application domain. IoTs, also, are designe to support the Smart City vision, which aim at exploiting the most advanced communication technologies to support added-value services for the administration of the city and for the citizens. This project aims at controlling water resources ,street light via Smartphone using Wi-Fi ascommunication protocol. The user here will move directly with the system through a web-based interface over the web, whereas home appliances like lights, fan and door lock smart city applications like light ,water are remotely controlled through easy website. This study aim to develop and design a prototype that can be used, together with an android phone as centralized switch for smart city application via Local Area Network or Internet.The communication with server allow the user to select the appropriate device. The communication with server permits the user to pick out the acceptable device. Now a day's due to huge advancement in wireless sensor network and other computation technologies, it is possible to provide flexible and low cost smart city automation system. Smart cities sponsor future situations where sensor extensiveness, data transfer and interchange, and information mash-up permit enhanced support of every phase of (social) life in human reimbursement.

Keywords: ANROID, Wi-Fi, IOT, ANDROID PHONE, SENSOR, RASBERRY Pie.

I. INTRODUCTION

A different types of solution for connectivity is available such as SMS, Wi-Fi, Radio Frequency orBluetooth.Among the possible hardware for the main system are microcontrollers including computers even a Raspberry Pi or a combination of both.Microcontrollers are less inexpensive than computers. Selecting the right device depends on the size of project.smart city is described as a technology which is used within the city environment to provide comfort, security, convenience, and energy efficiency to its user or occupants.By incorporation of the Internet of Things(IoTs), the research and development of smart city is going to become more and more popular. Different wireless technologies that sup ports remote data transfer, control and sensing such as RFID, Wi-Fi, Bluetooth, and even cellular networks have been evolved to add intelligence at different levels in the city.Internet of Things (IoT) is nothing but physical items talking to each other, machine-to-machine communications and person-to-computer system communications will be extended to"things".Extension of the current Internet which providing communication, connection and inter-networking in between devices and physical objects, or also known as Things, is a growing trend that is often called as the Internet of Things. The Internet of Things (IoT), also referred as the Internet of Objects, that's going to change everything which also include ourselves. IoT is the next evolution or generation of the Internet, it's like taking a huge leap in its ability to collect, analyze, and distribute data which ultimately we can turn into information then knowledge and finally into wisdom.The Internet of Things (IoTs) is nothing but connecting everyday objects like Internet TV s, smart phones, sensors and or actuators to the Internet where this devices linked together intelligently which enables new forms of communication nbetween people and things, and between things themselves.In general, IoT is an information sharing environment where objects in every-day life are connected to wired and wireless networks. Recently, it is used not only in the field of consumer electronics and appliances but also in other various fields such as a healthcare,smart home, smart car, energy system, and industrial security.

II. MOTIVATION OF THE PROJECT

Exisisting system uses bluetooth and zeegbee which is only operated in limited area. This is only use for home automation for detecting gas leakage,light too.The proposed system will be used in large commercial area.Internet of things is improve the life of human and also make the life is efficient.The proposed system is used for the development of smart city for the management of light system,water management system.

III. LITRATURE SURVEY

Every user who is experienced in the existing system may think of a system that may add more flexibility and run with some common applications such as android. This project is designed in such a way to avoid the disadvantages of the existing system. The existing system used only for home automation system. In home automation system provide the facilities for the user like a light management, gas leakage, etc. But these facilities are provided in a limited area which is only used in home. Using the Internet as a medium is most common because it does not have distance limitations unlike Bluetooth or infrared. The main objective is to design and to execute a cost-effective and open source home automation system that's capable of leading the smart city areas.

In past home automation, a network topology consisted of sensor nodes for data collection and transmission and servers or gateways for information collection and analysis and the relationship between a sensor and an actuator was defined clearly. In one study researcher introduced a home automation system based on Bluetooth, that using Android Smart phones. The devices that we used to access and control is physically connected to a Bluetooth controller. The Smart phone is then connected to it by using in-built Bluetooth connectivity which controls that devices.

In some other case researcher also provide network interoperability and one important feature that is remote access to control home devices or appliances using home gateways. There are few examples where researcher have reported an effective implementation for Internet of Things that are used for monitoring regular domestic conditions and also they trying to build on low cost ubiquitous sensing system. But it has some issues like requirement of IPv6 connectivity which is a major concern in implementing this methods. Also storage requirement and effective retrieval of data and security are concern. And other are just monitoring and controlling the home environment more like just the switching functionality.

There are number of issues in the existing system. Those issues are overcome in the proposed system which is used for developing the smart city using IOT. The proposed system provide reliable, cost efficient application for the light management system and water management system.

IV. SYSTEM ARCHITECTURE

Now a days usually wastage of water and electricity is often done by most of the people. The street lights are kept on even at the day time which is not required. Many places taps are kept open and the water get wasted. The municipality is not paying attention towards the wastage of water and electricity.

In our project we are going to manage the wastage of water and electricity by developing a smart city in our project. The wastage of these things is going to be controlled by using Raspberry Pi and for the purpose of the data storage we are using Pubnum cloud which automatically does the work of encryption

Architectural Design

The general diagram of system has been shown in Fig. It includes the Raspberry Pi, Pubnum Cloud etc. The user can enter their username and password in the log in page. This input function is pass to the Raspberry Pi module. Then Raspberry Pi module can send and check the data and give the output as the user select the option on the application. There are two option for choice water management and light management. As per user's requirement the output can be shown by the application. The total working of application is shown in the following figure.

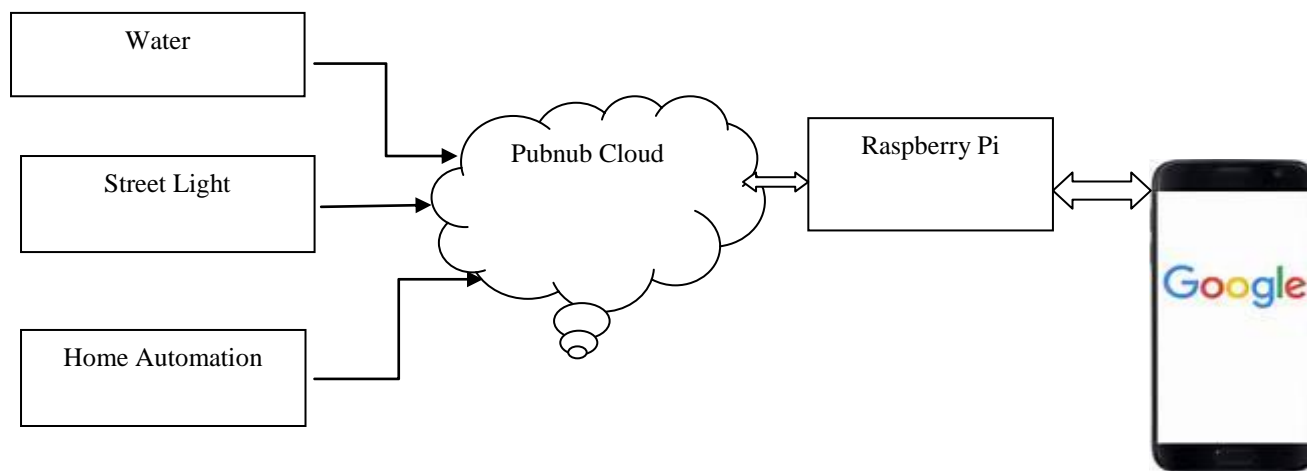


Fig.1-: Architecture of smart city using Ubiquitous computing

Description of Modules:

Log_in -:

In this module,it includes the Login form which has the following details:

- 1.USERNAME
- 2.PASSWORD

Water Management-:

In this module,we are going to manage the water supply of different areas of cities using our application which is controlled by user.

LightManagement-:

In this module,we are going to manage the light management of different areas of cities using our application which is controlled by user.

System Implementation

A smart city is a development to integrate multiple information and communication technology and IoT solution in secure fashion manage city assets but are not limited to water supply,network,light management,home automation services.The goal of building a smart city is improve quality of life.Information and communication technology (ICT)is used to enhance quality performance and interactive of services to reduce cost and resource consumption. This application can be implement by using Raspberry Pi 3 module,Relay,Adaptor of 5V, and android Phone.

Android OS

Android is a software information for mobile device that includes an operating system, middleware and key applications. The Android OS is based on Linux. Android Applications are made in a Java-like language running on a virtual machine called 'Dalvik' created by Google. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language.

Mobile Application

A mobile application is an application for mobile devices like smartphone or tablet. It varies from simple application to sophisticated application that contains a lot of functions. In order to develop an application, an Integrated Development Environment (IDE) is needed. The proponents developed the mobile application using Basic4Android IDE that uses Basic Programming Language instead of Java Programming Language.

Raspberry Pi

It is a credit size computer.It is a low cost device.We use module 3.It has 802.11 Wi Fi and 4.1Bluetooth connectivity is inbuilt.It has 40 GPIO pins.It has a simplification quality.It has a compatibility with Raspberry Pi 1 and 2.



Fig 2:-Raspberry Pie

Pubnub Cloud

It creates its own infrastructure which does not need to manage.In this Cloud we store our data.

CONCLUSION

The system proposed in this paper is we analyzed the solutions currently available for the implementation of urban IoTs. we make an application for smart city development. It increases the Life quality of the human being. The home devices, street lights, water supply can be controlled by this system. The wastage of water and light can be managed by the application. The enabling technologies, furthermore, have reached a level of maturity that allows for the practical realization of IoT solutions and services, starting from field trials that will hopefully help clear the uncertainty that still prevents a massive adoption of the IoT paradigm. The reliability of the system is the summary of its functionality and accuracy. According to the reliability results, the proposed system which uses Android phone, Wi-Fi connection is enough in overall.

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