Home Automation System Of Electricity Control Using Cloud Technology And Mobile Applications Implementing Data Analytics

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ABSTRACT: In this project a lesser cost and greater provisioning home control and environmental monitoring system. It employs an embedded micro – web server in Arduino Uno microcontroller, with IP connectivity for accessing and controlling devices and appliances remotely. These devices can be controlled through a web application or via Bluetooth and Android based Smart phone app. The proposed system does not require a dedicated server PC with respect to similar systems and offers a novel communication protocol to monitor and control the home environment with more than just the switching functionality.[1] To demonstrate the feasibility and effectiveness of this system, devices such as light switches, power plug, temperature sensor, gas sensor and motion sensors ,camera control, A/c control, computer control ,geyser control, fan on off control, gas leakage detection and control, bike theft location finder, copying of files from a remote place to your actual place, home automatic capture for theft control and can be accessed through a website and can control all these through web and as well as through android mobile app and those data stored in the database can be migrating from one system to another n if one server goes down in web app another server the user can access and control the equipment and can see the same database in that cloud service also and have been integrated with the proposed home control system. but the key feature of this device is that we can also manage our home appliances not only through Bluetooth but also through the cloud system from any other place it will show u which all electrical appliances are on at your home and u can on or off those devices by connecting through cloud website and this is through by smart technology and u can sense the temperature and other miscellaneous activities through this smart technology and this web application is a creative application in which u can access it from anywhere and control ur home appliances from any part of the country through cloud technology and can control n see all the devices that is been on r off and can control it through cloud technology this is one of the key feature of this automation technology in a smart functionality technology of this automation system .and the new feature of this project is the data analytics which is the booming technology in current trend and one of security trend introduce in this project is that the biometric system for logging into the website which provides the high security than the other login credentials and this is one of the booming technology been implemented in this project. Biometric is accessed the phone as well as the system fingerprint device also this is the invention of this project.

KEYWORDS: Home automation System (HAS), Internet of Things (IoT), Cloud networking, Wi-Fi network, Android mobile, Bluetooth [3], Aurdino uno, relay switches

I.   INTRODUCTION

In this paper, security played an key role in to prevent living and finance. This is succeeded by the implementing various systems into the securities with a single control like surveillance, access control, fire detection, etc.

 [1] A smart home is one that is equipped with lighting, heating, electronic devices that can be controlled by mobiles or through the cloud. The cloud based home automatic security system rules on controlling home electronic devices whether you are in or out of the place. Home automatic system gives an individual the strength to automatically control things around his house.

[2] A house appliance is a instrument engineered to perform a specific function, like an electrical device, like a refrigerator, for household use. The words electronic appliance and devices are used many times

[2]. In current days where things are being controlled automatically, usually the basic tasks of powering ON/OFF

certain devices, either remotely or nearby. The concept of remote management of household devices over the internet from anywhere, any time in the world today can be a reality [2]

II.   EXISTING SYSTEM

[1]In this paper of Home Automation security system of cloud technology and mobile Application that employs combination of multi-touch mobile devices, cloud computing networks, wireless communication, and power-line communication to provide the user with remote control of various lights and appliance within their house. This system uses a consolidation of a mobile phone application, wireless remotes, and computer based program to provide a means of user interface to the client

[1]. The main objective of this paper is to design and implementing a control and monitoring system for smart house. Smart house system consists of many systems that controlled by LabVIEW software as the main controlling system in this project. Also, the smart house system was supported by remote control system as a subcontrolling system. The system also is connected to the internet to monitor and control the house equipment's from anywhere in the world using LabVIEW the prime objective of this project is to assist handicapped/old aged people. It gives basic idea of how to control various home appliances and provide a security using Android phone/tab.

[2] The design consists of Android phone with home automation application, Arduino Mega ADK. User can interact with the android phone and send control signal to the Arduino ADK which in turn will control other embedded devices/sensors.

[3] In this project proposes a new design for the smart home using the wireless sensor network and the biometric technologies. The proposed system employs the biometric in the authentication for home entrance which enhances home security as well as easiness of home entering process

.[4]The structure of the system is described and the incorporated communications are analyzed, also an estimation for the whole system cost is given which is something lacking in a lot of other smart home designs offers'-SH is designed to be capable of incorporating in a building automation system and it can be applied to offices, clinics, and other places.

[4] The project ends with an imagination for the future of the smart home when employs the biometric technology in a larger and more comprehensive form.

III.   PROPOSED SYSTEM FEATURE & WORK FLOW
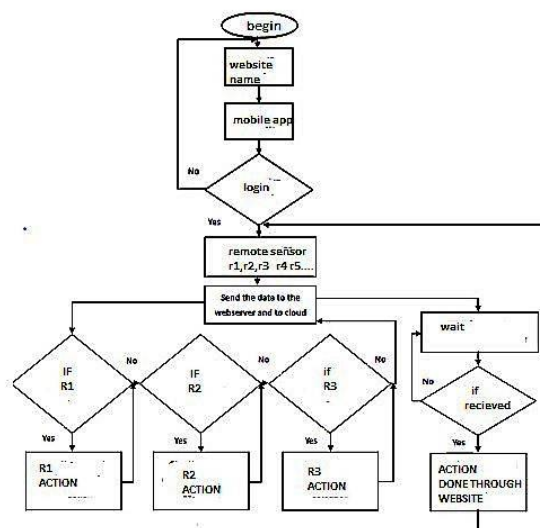
ISSN(Online) : 2320-9801
ISSN (Print) : 2320-9798

o   The proposed system is a House automatic system, consists of cloud server, remote sensors. Servers controls and monitor the various remote sensor, IT seems to be easily configured and can be managed more h/w interfaces module.

o   The Aurdino uno, to which the board is inserted, acts as web server. Automatic System can be accessed from the web browser of any system of the same Local Area Network using IP, or remotely from any PC or Android device hand held equipment connected to the Wi-Fi with appropriate web through website name internet technology is selected to be the network that established connection server and the remote sensors. Internet is selected to progress system security and to increase system availability and scalability.   The proposed model of the home automatic system.

o   The project consist of different equipments like temperature recognizer and controller the temperature automatically to room atmosphere, gas, motion leakage detector and controller and LIGHT SENSORS, bike theft location sending information geyser on and off ,computer on and off and also copying the files of the computer from system to any other device from a remote place, control fan, control A/control, music sound system, different room equipments control system and also sense the house entry and exit of the people and recording it and storing it in the database.

o   It even captures each image of the people who is entering and exiting to the home and storing it on the database and many other controlling of the home appliances through voice recognition and through Bluetooth and as well as the and mobile app and transfer the computer file through the mobile app from any remote location by switching on the computer from any location and copying the file. Initially the Aurdino uno connects to the internet through Wi-Fi. will be raised and the required action is taken is for the controlling of the parameters.

o   In the proposed model the temperature, gas leakage, motion and other features are monitored in the home is monitored. An the website and this is through by smart technology and u can sense the temperature and other miscellaneous activities through this smart technology and this web application is a creative application in which u can access it from anywhere and control our home appliances from any part of the country through cloud technology and can control n see all the devices that is been on or off and can control it through cloud technology this is one of the key feature of this automation technology in a smart functionality technology of this automation system and the new feature of this project is the data analytics which is the booming technology in current trend .

o   One of security trend introduce in this project is that the biometric system for logging into the website which provides the high security than the other login credentials and this is one of the booming technology been implemented in this project. Biometric is accessed through phone for the login credential for more security system as it will be more secured than the other login credential methods so this becomes the advantage for the end users so that thy cant fear of any hacking or any trouble two options of login credentials will be provided so user need not to be worried for the login r need not to be tensed for the hack or anything because each time the user login he will get an option for each login time so the user need not to be worried about the website security this is the one more new technology which is been introduced in this system as one more added advantage of all other system introduced on behalf of all this which has been said so this becomes a greater invention for the home and any other automation system as well as the system fingerprint device also this is the new invention of this project.

IV.   TECHNICAL SPECIFICATIONS FOR THE PROPOSED PROJECT

Hardware required: -

✓ Arduino Atmega
✓ Bluetooth -HC 05
✓ Jumpier Wires male to male
✓ LCD/LED crystal display
✓ Potentiometer (10k)
✓ Relay switches

Software required: -

✓   Any cloud services
✓   Arduino IDE
✓   MIT App Inventor
✓   JAVA Development Kit (JDK)

V.   INNOVATIONS AND USEFULLNESS

a)   Security
b)   Energy Efficiency
c)   Savings
d)   Convenience
e)   Comfort
f)   Peace of Mind

VI.   CONCLUSION

Conclusion the home automation security using cloud computing under Internet of Things has been proven to work satisfactorily by connecting simple appliance to it and the appliances were successfully controlled remotely through cloud. The proposed system not only check the sensors data, like temperature, gas, light, motion sensors, vehicle sensor, camera sensor but also accurates a process as per the requirement, for example switching the lights when it gets dark. It also stores the all particular sensor parameters in the cloud (Gmail) in a timely manner respectively. This will help the user to analyzing the condition of different parameters in the home anytime anywhere.

VII.   FUTURE WORK

Using this system as security framework , the system can be expanded to include various other options which could include home automation securities feature like taking the photo of a person moving around the house and storing it onto the cloud. This will take less data storaging space than using the CCTV camera which will record it all the time and stores it. This system can be expanded for energy monitoring and saving, or for the weather condition stations. This kind of a system with respective changes can be implemented in the highly qualified MNC's and in multi-specialty for disable people or in industries where human invasion is impossible or dangerous, and it can also be implemented for environmental monitoring.

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