Energy Analyzer

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Abstract: As home energy use is increasing and renewable energy systems were deployed, home energy management system must think about each energy consumption and generation at the same time to reduce the energy value. the house server gathers the energy consumption and generation information, analyzes them for energy estimation, and controls the house energy use schedule to reduce the energy value.

Home owners will be able to receive feedback status of any home appliances under control whether switched on or off remotely from their mobile phones or on computer screen using web services. Arduino kit with the integration of mobile phone provides the smart automated house system with the desired baud rate.

The analysis and implementation of the home automation technology using Arduino Based Home Automation System for user android application and Web service to control home appliances such as light, conditional system, and security system via messages on android phone. The proposed architecture is expected to optimize home energy use and result in home energy cost saving.

Keywords: IoT, Arduin, Smart home, Enrgy Analyzer.

I. INTRODUCTION

Basically this home automation system is used for to minimize the user work. When user want to on the home appliances for his/her own use. So user can automatically on through his/her smart phone. The huge demand of energy by home appliances, air conditioning and lighting makes homes to be considered as one of the most critical area for the impact of energy consumption. Smart technology based home is a good choice for people not only care about security, comfort but energy saving as well.

In recent years, there has been a growing interest among consumers in the smart home concept. Smart homes contain multiple, connected devices such as home entertainment consoles, security systems, lighting, access control systems and surveillance. Intelligent home automation system is incorporated into smart homes to provide comfort, convenience, and security to home owners. Home automation system represents and reports the status of the connected devices in an intuitive, user-friendly interface allowing the user to interact and control various devices with the touch of a few buttons. A number of the main communication skills used by today's home automation scheme comprises Bluetooth, WiMAX and Wireless LAN (Wi-Fi), Zigbee, and Global System for Mobile Communication(GSM).

II. LITERATURE SURVEY

This [1] paper presents novel, stand alone, low-cost and flexible GSM- ZigBee based home automation system. The architecture is designed to reduce the system's complexity and lower fiscal costs. Hence, the system endeavors not to incorporate complex and expensive components, such as a high end personal computer where possible. The scheme is flexible and scalable, permitting extra home application intended by numerous dealer, to be securely and safely added to the home network with the minimum amount of effort. The system allows home owners to monitor and control connected devices in the home, through a variety of controls, including a ZigBee based remote control. Users could remotely check and manage their home appliances with GSM.

[2]The main objectives of the proposed system is to design and to implement a cheap and open source home automation system that is capable of controlling and automating most of the house appliances through an easy manageable way to run and maintain the secured home automation system required. The proposed system uses SMS service provided by GSM network to enable user of remotely monitoring, and controlling his home automation system. Even the user need to pay for each transaction executed, but on the other hand user need no special modification on network infrastructure in his home, or even no need for network infrastructure at all.

[3]The proposed research work is focused on functionality of the GSM protocol, which allows the user to control the target system away from residential using the frequency bandwidths. The idea of serial communication and AT-commands has been useful towards enlargement of the elegant GSM-based home automation scheme. Home owners will be able to receive feedback status of any home appliances under control whether switched on or off remotely from their mobile phones. PIC16F887 microcontroller by the amalgamation of GSM offers the elegant automated house scheme with the preferred baud rate of 9600 bps.

III. SYSTEM ARCHITECTURE
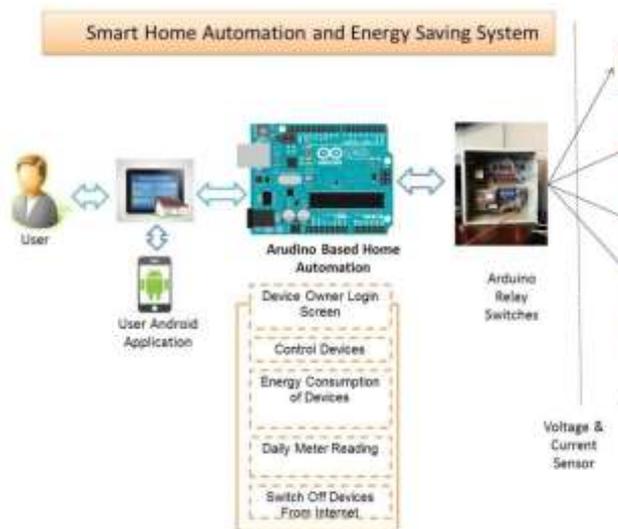
Fig 1 : System Architecture

The design of our smart home automation and energy saving system is given in Fig. 1. The architecture consists of user android phone and web server. To offer simple handling of home devices for elderly and handicapped persons. To give more safety control on the switches with low voltage activating method. In order improve the standard living in home, this system provides Android based application. Main focus is to control home equipment's like fan, Bulb etc and energy saving. The home server collect the power utilization and creation data, evaluate them for power evaluation, and controls the home energy use schedule to minimize the energy cost. The remote energy management server aggregates the energy data from numerous home servers, compares them, and creates useful statistical analysis information. By taking into consideration both power utilization and scheming the equipment's since internet the proposed architecture is expected to optimize home energy use and result in home energy cost saving.

3.1 Modulus

- **Login :** User also able to login remotely from the internet and from his phone to control the equipment at home connected to arduino controller.
- **Monitoring All home device :** The arduino board is a hardware interface consent you to manage and observe hardware devices with your computer and mobile phone. These are basically plug-in module which allows you to switch devices on and off using a remote control from computer or phone device.
- **Daily Meter Reading :** System also provide meter reading on daily basis so user come to know about usage of energy. To optimize home energy use and result in home energy cost saving.
- **Notifications :** Whenever any change happens or energy consumption of the devices is increases notification message will be sent to user regarding the respective change so that user can take action.

## IV. RESULTS OR SCREENSHOTS
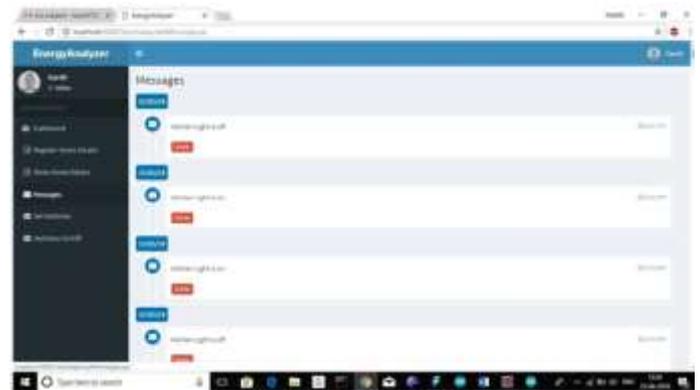
Fig 2 : Notification of System
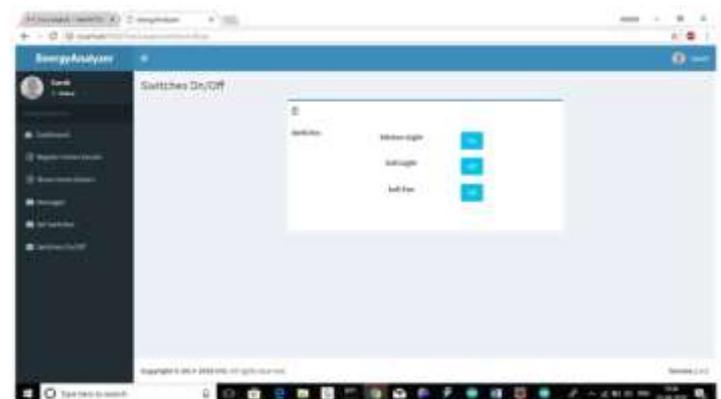
Fig 3 :Switch on/of

V. CONCLUSION

Here we implemented a prototype of GSM based home automation which shows the accuracy of =98%.User is able to access remotely from the internet to control the equipment at home. This system can be used for providing security in home. Whenever any change happens in the devices, automatic notification message will be sent to user regarding the respective change. So this system allows to monitor the all home devices remotely.

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