WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

A Dynamic Communication and Controling System Industrial Machine Using Iot

M.Suresh, S.Sureka, Ms.S.Priya M.E

Department of Electronics andCommuncation Engineering, Muthayammal EngineeringCollege,Namakkal, Tamilnadu, India
Suresh0002511@gmail.com

ABSTRACT:

Our objective is to design an Industrial machine control and monitoring system using IOT. Surveillance is most important security systems in home, industrial, office and public places. In this security system is based on the embedded system along with Microcontroller and sensor networks.. This highly reactive approach has low computational requirement. Therefore it is well suited for Industrial surveillance system. This surveillance security system implemented using Microcontroller and sensors. Industrial security systems have grown in popularity in recent years, a Industrial owner's look for ways to protect their personal space and enhance their Industrial values. It is necessary for every Industrial owner to considering adding a industrial security and monitoring system, as burglaries, thefts and murders have become routine in big cities. This paper demonstrates a Industrial machine control system that allows the user to control it with a wireless device such as a Wi-Fi or Bluetooth or Internet enabled mobile phone. A desktop PC is used to run the server software. The system allows the user to control each of the lights and fans individually. It can automatically turn off the main motors and turn on a motors at a specified time

*Keyword:*Natural and Artificial Disaster Management,Industrial Automation

INTRODUCTION

Electricity is one of the vital requirements for sustainment of comforts of life. IT should be used very judiciously for its proper utilization. But in our country we have lot of localities where we have surplus supply for the electricity while many areas do not even have access to it. Our policies of its distribution are also partially responsible for this because we are still not able to correctly estimate our exact requirements and still power theft is prevailing.

On the other hand consumers are also not satisfied with the services of power companies. Most of the time they have complaints regarding statistical errors in their monthly bills. Thus we are trying to present an idea towards the minimization of technical errors and to reduce human dependency at the same time. With the help of this project we are aiming to receive the monthly energy consumption from a remote location directly to a centralized office. In this way we can reduce human efforts needed to record the meter readings which are till now recorded by visiting every home individually. This results in considerable loss of human hours and also provides considerable details regarding the average consumption of a locality so that power supply can be made according to these data. This will help the officials in deciding the specifications of transformers and other instruments requiredin powertransmission.
This idea is economically efficient as well because we can get the meter reading at a very low cost. The implementation is done in such a way that a SMS is delivered to the Modem whose reading is to be noted and then that meter replies to the server in the SMS format and it is known that SMS costs are very low.The purpose of this project is to remote monitoring and control of the Domestic Energy meter. This system enables the Electricity Department to read the meter readings regularly without the person visiting each house. This can be achieved by the use of Microcontroller unit that continuously monitors and records the Energy Meter readings in its permanent (non-volatile) memory location. This system also makes use of a GSM modem for remote monitoring and control of Energy Meter.

LITRETURE REVIEW

Today, we are entering post-PC era where mobile devices (e.g. iPads, Smartphones and Handheld tablets) are handling daily tasks that traditional desktop and laptop computers once handled. Several reports show that personal computers are no longer on the leading the edge of computing and the use of mobile devices are quickly taking over. Accompanying the shift from PCs to multi-touch mobile devices is the use and implementation of Cloud Networking. With the availability of products which integrate mobile devices and cloud networking rapidly increasing, many users can see how new technology can impact their everyday lives. In this paper we have developed a Home Automation system that employs the integration of multi-touch mobile devices, cloud networking, wireless communication, and power-line communication to provide the user with remote control of various lights

and appliances within their home. This system uses a consolidation of a mobile phone application, handheld wireless remote, and PC based program to provide a means of user interface to the consumer. The home automation system differs from other systems by allowing the user to operate the system without the dependency of a mobile carrier or Internet connection via the in-home wireless remote. This system is designed to be low cost and expandable allowing a variety of devices to be controlled.

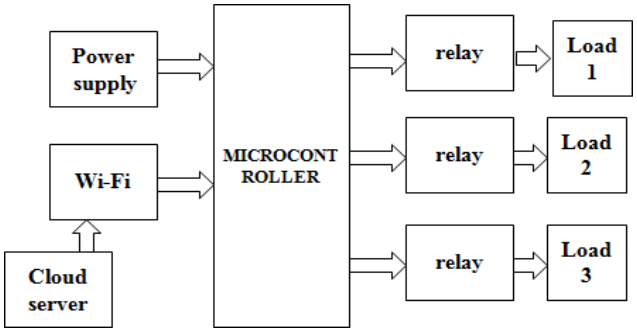
The Microcontroller based system continuously records the readings and the live meter reading can be sent to the Electricity department on request. This system also can be used to disconnect the power supply to the house in case of non-payment of electricity bills. A dedicated GSM modem with SIM card is required for each energy meter. The GSM AMR takes the advantage of available GSM infrastructure nationwide coverage and the Short Messaging System (SMS) cell broadcasting feature to request and retrieve individual houses and building power consumption reading back to the energy provider wirelessly. The Store and Forwarding feature of SMS allow reliable meter reading delivery when GSM signsl is affected by the poor weather conditions. The stored message is archive in the mobile operator and can be later retrieve for billing purposes.

Home automation can be defined as a system implemented at a residential place whereby the intention is to make the place intelligent so that energy is conserved and security is maintained. It makes the life of the residents flexible, healthy and comfortable. Initially systems were developed in this regard but those systems had to be deployed on Internet and heavy machineries like a big Personal Computer. Our system will be free from all this giant components, which, indirectly suggests that our system has a good quality of portability. Most systems would exchange data or would communicate with the help of Bluetooth, ZigBee and GSM. These systems have their own disadvantages. For example, system-implementing ZigBee has too low bandwidth for the data communication whereas the GSM implementing system has too large bandwidth for the data communication. Thus, there is wastage of the essential bandwidth, which goes without being used. The other systems, which were in use, are, for example Java Based Systems and SMS based systems. Java Based Systems still use web pages, which is a disadvantage if data intranet or Internet is off. SMS based system is more costly since it requires data transfer from the real time service provider. This Wi-Fi protocol has some upper hand benefits like its range is in the radius of 150-200m .The mobile application can also extend the security of the system via an implementation of the password protected application

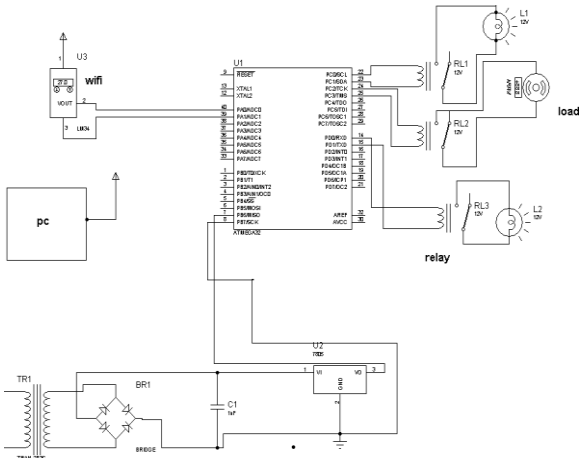
PROPOSED METHOD

The thought of this project is to prove that, single board computers may monitor and management industrial machines. Instead of mistreatment pricey pcs (comparitively) we have a tendency to square measure about to management the commercial machine mistreatment this small embedded computer. This is attainable as a result of Arduino carries with it increasedThe Arduino can replace manual programming with G code, that reduces the workforce consumption. We can use any electronic show device like movable, Tablet etc. It eliminates the usage of value on mistreatment computers, that is additional economical. Stepper Drivers that drives the stepper motors square measure directly connected to Arduino pins. The Input command on Arduino is given through show device to drive the motor. The system can be easily integrated into an existing electrical system of a building thanks to its simplified design. It can also be easily installed for just a single room if one so desires. Modifications to the existing electrical system are minimal, thereby reducing installations costsThe mobile device connects to the server PC through Bluetooth or Wi-Fi or through the internet. The user sends commands to the server from the mobile device. The microcontroller is connected to the server via USB. On receiving commands from the mobile device, the server sends commands to the microcontroller over the USB connection. The microcontroller is directly connected to the relays and it can enable or disable them. The relays are connected to the electricalsystem of the building so that they can control the plug points

.BLOCK DIAGRAM



CIRCUIT DIAGRAM



Circuit diagram of the system

CIRCUIT DESCRIPTION

ADVANTAGE

The proposed home automation system has the capabilities to control the following components in users home and monitor the following alarms:

1) Temperature and humidity
2) vibration detection

In recent years, wireless systems like Wi-Fi have become more and more common in home networking. Also in home and building automation systems, the use of wireless technologies gives several advantages that could not be achieved using a wired network only.

1) Reduced installation costs: First and foremost, installation costs are significantly reduced since no cabling is necessary. Wired solutions require cabling, where material as well as the professional laying of cables (e.g. into walls) is expensive.

2) System scalability and easy extension: Deploying a wireless network is especially advantageous when, due to new or changed requirements, extension of the network is necessary. In contrast to wired installations, in which cabling extension is tedious. This makes wireless installations a seminal investment.

3) Aesthetical benefits: Apart from covering a larger area, this attribute helps to full aesthetical requirements as well. Examples include representative buildings with all-glass architecture and historical buildings where design or conservatory reasons do not allow laying of cables.

4) Integration of mobile devices: With wireless networks, associating mobile devices such as PDAs and Smart phones with the automation system becomes possible everywhere and at any time, as a device's exact physical location is no longer crucial for a connection (as long as the device is in reach of the network). For all these reasons, wireless technology is not only an attractive choice in renovation and refurbishment, but also for new installations.

HARDWARE DESCRIPTION

1. ARDUINO

Arduino is a computer hardware and software company, project, and user community that designs and manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL),[1] permitting the

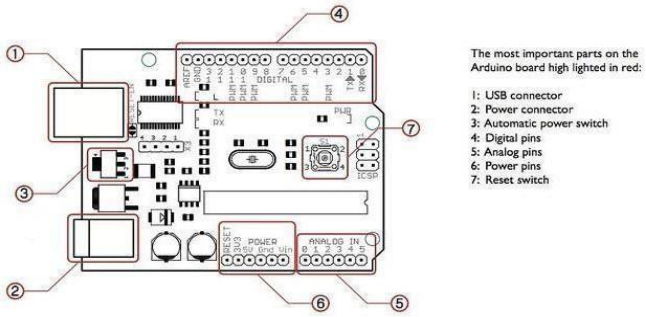
manufacture of Arduino boards and software
distribution by anyone. Arduino boards are available commercially in preassembled form, or as do-it-yourself kits. The project's board designs use a variety of microprocessors and controllers. These systems provide sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards ("shields") and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, for loading programs from personal computers. The microcontrollers are mainly programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.

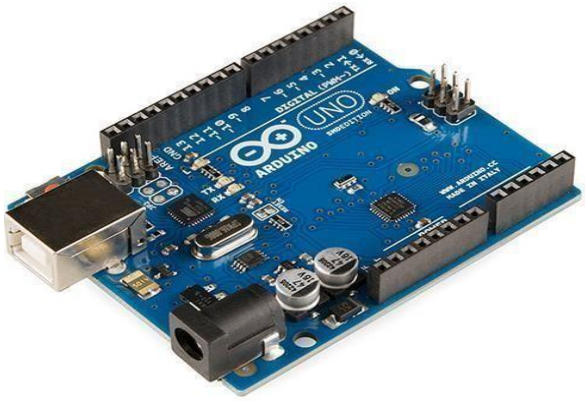
The Arduino project started in 2005 as a program for students at the Interaction Design Institute Ivrea in Ivrea, Italy, aiming to provide a low-cost and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators. Common examples of such devices intended for beginner hobbyists include simple robots, thermostats, and motion detectors

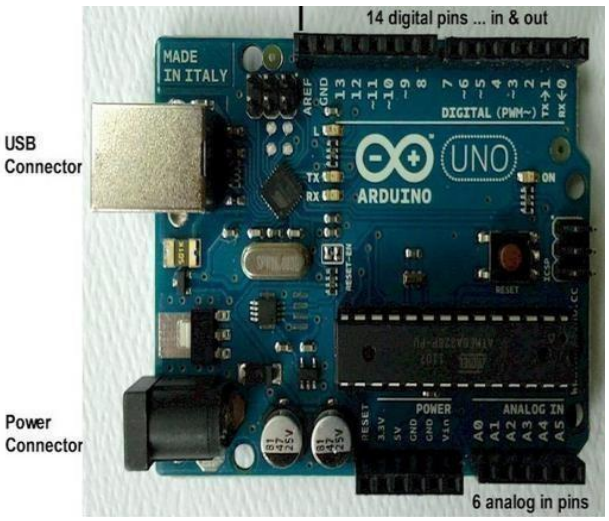
2 . ARDUINO UNO R3 MICROCONTROLLER

The Arduino Uno R3 is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to- DC adapter or battery to get started.

The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2(Atmega8U2 up to version R2) programmed as aUSB-to-serial converter.
Revision 2 of the Uno board (A000046) has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode.







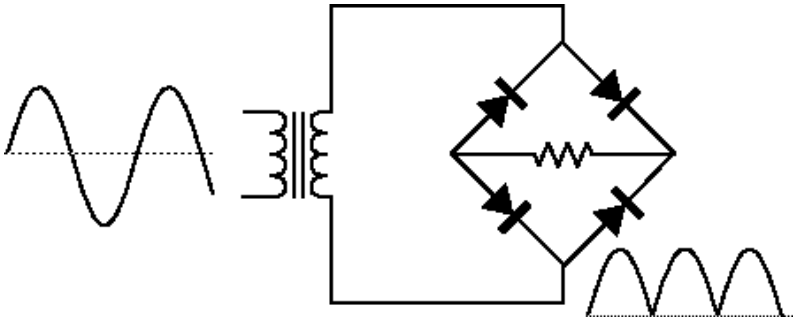
3.POWER

The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm centre-positive plug into the board's power jack. Leads from a battery can be inserted in the Gnd and Vin pin headers of the POWER connector. The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts. The power pins are as follows:

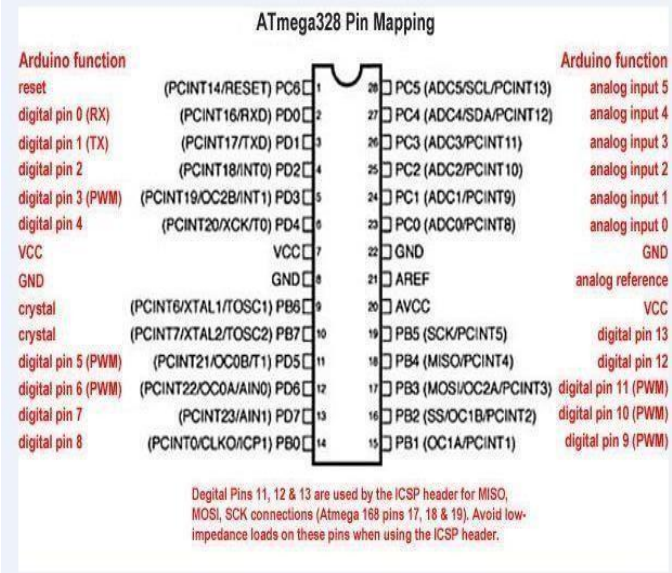
VIN.- The input voltage to the Arduino board when it's using an external power source (as opposed to 5 volts from the USB connection or other regulated power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin.

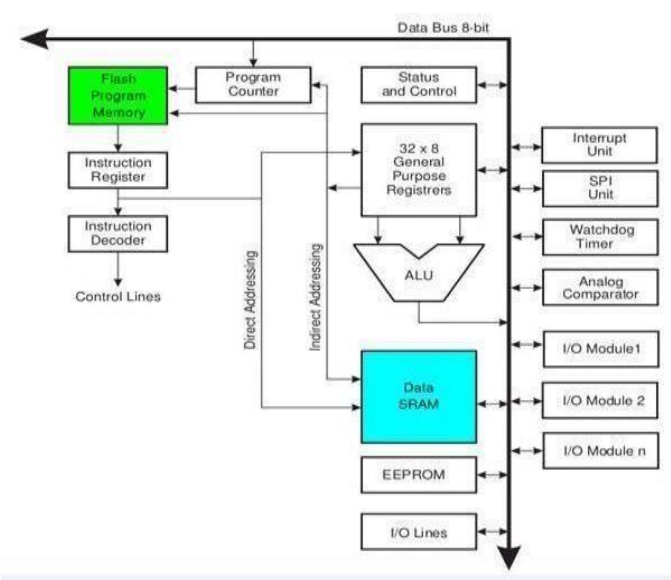
5V.- The regulated power supply used to power the microcontroller and other components on the board. This can come either from VIN via an on-board regulator, or be supplied by USB or another regulated 5V supply.

3V3 - A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 50 mA.



Input and Output



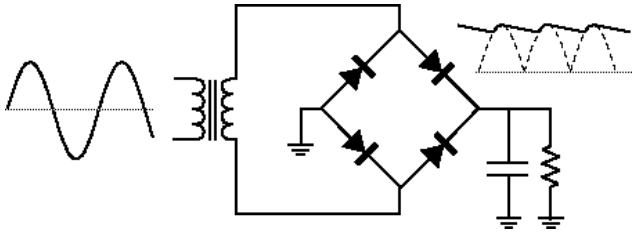


3. BRIDGE RECTIFIER

A bridge rectifier makes use of four diodes in a bridge arrangement to achieve full-wave rectification. This is a widely used configuration, both with individual diodes wired as shown and with single component bridges where the diode bridge is wired internally.

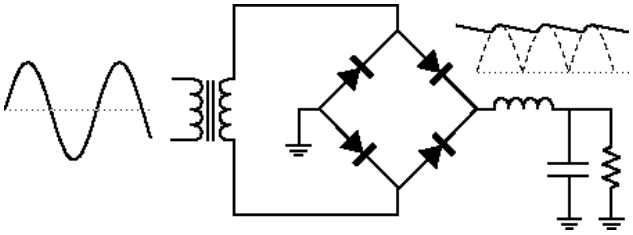
Bridge Rectifier, RC Filter

A bridge rectifier makes use of four diodes in a bridge arrangement to achieve full-wave rectification. This is a widely used configuration, both with individual diodes wired as shown and with single component bridges where the diode bridge is wired internally.



Bridge Rectifier, LC Filter

A bridge rectifier makes use of four diodes in a bridge arrangement to achieve full-wave rectification. This is a widely used configuration, both with individual diodes wired as shown and with single component bridges where the diode bridge is wired internally.



3. LCD

A liquid crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. Lcds are available to display arbitrary images (as in a general-purpose computer display) or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements. Lcds are used in a wide range of applications including computer monitors, televisions, instrument panels, aircraft cockpit displays, and signage. They are common in consumer devices such as video players, gaming devices, clocks, watches, calculators, and telephones, and have replaced cathode ray tube (CRT) displays in most applications. They are available in a wider range of screen sizes than CRT and plasma displays, and since they do not use phosphors, they do not suffer image burn-in. Lcds are, however, susceptible to image persistence.

The LCD screen is more energy efficient and can be disposed of more safely than a CRT. Its low electrical power consumption enables it to be used in battery-powered electronic equipment. It is an electronically modulated optical device made up of any number of segments filled with liquid crystals and arrayed in front of a light source (backlight) or reflector to produce images in color or monochrome. Liquid crystals were first discovered in 1888. By 2008, worldwide sales of televisions with LCD screens exceeded annual sales of CRT units; the CRT became obsolete for most purposes.

.

V. SOFTWARE DESCRIPTION

Embedded C

An embedded system is an application that contains at least one programmable computer (typically in the form of a microcontroller, a microprocessor or digital signal processor chip) and which is used by individuals who are, in the main, unaware thatthe system is computer-based.

Introduction

Looking around, we find ourselves to be surrounded by various types of embedded systems. Be it a digital camera or a mobile phone or a washing machine, all of them has some kind of processor functioning inside it. Associated with each processor is the embedded software. If hardware forms the body of an embedded system, embedded processor acts as the brain, and embedded software forms its soul. It is the embedded software which primarilygoverns the functioning of embedded systems.

During infancy years of microprocessor based systems, programs were developed using assemblers and fused into the EPROMs. There used to be no mechanism to find what the program was doing. LEDs, switches, etc. were used to check correct execution of the program. Some 'very fortunate' developers had In- circuit Simulators (ICEs), but they were too costly and were not quite reliable as well.

As time progressed, use of microprocessor-specific assembly-only as the programming language reduced and embedded systems moved onto C as the embedded programming language of choice. C is the most widely used programming language for embedded processors/controllers. Assembly is also used but mainly to implement those portions of the code where very high timing accuracy, code size efficiency, etc. are prime requirements.

EMBEDDED SYSTEMS PROGRAMMING

Embedded systems programming is different from developing applications on a desktop computers. Key characteristics of an embedded system, when compared to PCs, are as follows. Embedded devices have resource constraints(limited ROM, limited RAM, limited stack space, less processing power)Components used in embedded system and PCs are different; embedded systems typically uses smaller, less power consuming components. Embedded systems are more tied to the hardware.Two salient features of Embedded Programming are code speed and code size. Code speed is governed by the processing power, timing constraints, whereas code size is governed by available program memory and use of programming language. Goal of embedded system programming is to get maximum features in minimum spaceand minimum time.

Embedded systems are programmed usingdifferent type of language

- Machine Code
- Low level language, i.e., assembly
- High level language like C, C++, Java, Ada, etc.
- Application level language like Visual Basic, scripts,Access, etc.

.

CONCLUSION

The paper represent a novel approach for controlling and monitoring the electrical distribution line . It will possible using IOT. Overhead transmission lines are vulnerable to weather, common weather component like smokes, fumes, rainfalls, snowfalls, winds and heavy storms, humidity, line and air temperature, all this things affect a lot, therefore, the damages occurred in power transmission line and due to this type of obstacle power line failure is occurred at any area. For this purpose we need an advance monitoring system. Transmission line is important to measure the use of power line capacity. Electric current and line position are two important parameters to measure the transmission line. The aim of this paper to monitor the line position at any area using the concept of electrical distribution line.

REFERENCES

Rosslin John Robles and Tai-hoon Kim, “Review: Context Aware Tools for Smart Home Development”, InternationalJournal of Smart Home,Vol.4, No.1, January, 2010

Hitendra Rawat, Ashish Kushwah, Khyati Asthana, Akanksha Shivhare, “LPG Gas Leakage Detection & Control System”, National Conference on Synergetic Trends in engineering and Technology (STET-2014) International Journal of Engineering and Technical Research ISSN: 2321-0869,Special Issue

Nicholas D., Darrell B., Somsak S., “Home Automation using Cloud Network and Mobile Devices”, IEEE Southeastcon 2012, Proceedings of IEEE. Chan, M., Campo, E., Esteve, D., Fourniols, J.Y., “Smart homes-current features and future perspectives,” Maturitas, vol. 64, issue 2, pp. 90-97, 2009

Das, S.R., Chita, S., Peterson, N., Shirazi, B.A., Bhadkamkar, M., “Home automation and security for mobile devices,” IEEE PERCOMWorkshops, pp. 141-146, 2011

S.D.T. Kelly, N.K. Suryadevara, S.C. Mukhopadhyay, “Towards the Implementation of IoT for Environmental Condition Monitoring in Homes”, IEEE, Vol. 13, pp. 3846-3853, 2013

Rajeev Piyare “Internet of Things: Ubiquitous Home Control and Monitoring System using Android based Smart Phone” International Journal of Internet of Things 2013, 2(1): 5-11 DOI: 10.5923/j.ijit.20130201.02

G. Kortuem, F. Kawsar, D. Fitton, and V.Sundramoorthy, "Smart objects as building blocks for the internet of things," Internet Computing, IEEE,vol. 14, pp. 44-51, 2010.

S. Hilton. (2012, 14 January). Progression from M2M to theInternet of Things: an introductory blog. Available: http://blog.bosch- si.com/progression-from-m2m-to-internet-of- things-an-introductory-blog/

C.-H. Chen, C.-C. Gao, and J.-J. Chen, "Intelligent Home Energy Conservation System Based On WSN," presented at the International Conference on Electrical, Electronics and Civil Engineering, Pattaya, 2011.

R. Piyare and M. Tazil, "Bluetooth based home automation system using cell phone," in Consumer Electronics (ISCE), 2011 IEEE 15th International Symposium on, 2011, pp. 192-195.

Wikipedia. (2012, 12th December). Home automation. Available: http://en.wikipedia.org/wiki/Home_automation