

SMART HOME BASED ON IOT NOTIFICATION, AUTOMATION AND HIGH SECURITY FEATURES

By Ankur rai

Abstract: IOT or web of things is an up and coming innovation that enables us to control equipment gadgets through the web. Here we propose to utilize IOT so as to control home machines, subsequently robotizing current homes through the web. This framework utilizes three burdens to show as house lighting and a fan. Our easy to use interface enables a client to effortlessly control these home machines through the web. For this framework we utilize an AVR family microcontroller. This microcontroller is interfaced with a WIFI modem to get client directions over the web. Transfers are utilized to switch loads. The whole framework is fueled by a 12 V transformer. In the wake of getting client directions over the web, microcontroller forms these guidelines to work these heaps in like manner Hence this framework takes into account productive home automation over the web.

Keywords: Microcontroller, IOT, Blink, Arduino, NodeMCU.

Introduction:

In this paper, with a dream to accomplishing augmented automation we have detailed a viable usage for Internet of Things utilized for checking standard residential conditions by methods for ease universal detecting framework. It would adequately make a transfer of machines that give boost to one another and require the base human mediation. The portrayal about the coordinated system design and the interconnecting components for dependable estimation of parameters by keen sensors and transmission of information by means of web is being exhibited. The longitudinal learning framework will almost certainly give restraint system to better activities of the gadgets amid observing. The structure of the checking framework depends on mix of unavoidable conveyed detecting units, data framework for information accumulation, thinking. The unwavering quality of detecting data transmission through the proposed coordinated system engineering is generally 97%. The model will be tried to produce ongoing graphical data. IoT inclusion is extremely wide and incorporates assortment of articles

like advanced mobile phones, tablets, computerized cameras and sensors. When every one of these gadgets are associated with one another, they empower an ever increasing number of brilliant procedures and administrations that help our essential needs, economies, condition, wellbeing and so on. Such colossal number of gadgets associated with web gives numerous sorts of administrations and produce immense measure of information and data.

Literature Review:

The Internet of Things (IoT) is the interconnection of particularly recognizable inserted registering gadgets inside the current Internet system. Commonly, IoT is required to offer propelled availability of gadgets and frameworks, and administrations that goes past M2M for example machine-to-machine interchanges and covers an assortment of conventions, different spaces, and applications. The interconnection of all these inserted gadgets which additionally incorporates brilliant articles, is relied upon to lead in automation in about all fields empowering propelled applications like a Smart Grid. As per Gartner, there will be almost 26 billion gadgets on the Internet of Things by 2020. ABI Research has evaluated that in excess of 30 billion gadgets will be remotely associated with the Internet of Things by 2020. According to the ongoing overview and concentrate done by Pew Research Internet Project, a tremendous greater part of the innovation specialists and drew in Internet clients who reacted 83 percent concurred with the origination that the Internet of Things, implanted, wearable figuring will have far reaching and useful impacts by 2025. It is evident that the IoT will comprise of a substantial number of gadgets being associated with the Internet.

The Internet of Things (IoT) alludes to remarkably conspicuous items and their virtual portrayals in an Internet-like structure. Web of Things allude to everyday items, that are justifiable, discernable, locatable, addressable, or potentially controllable through the Internet utilizing either RFID, remote LAN, wide-zone arrange, or different methods. These articles incorporate not just the everyday usable electronic gadgets or the results of higher innovative improvement, for example, vehicles and hardware, yet in addition incorporate different things like sustenance, garments, cover; materials, their parts, and sub-congregations; products and extravagance things; limits, tourist spots, and landmarks; and all the variety of trade and culture. Pervasive figuring alludes to another class of processing in which the PC totally penetrates the life of the client. Web of Things (IoT) will involve billions of gadgets that can detect, impart, figure and possibly incite. Information streams originating from these gadgets will move the customary ways to deal with information the board and add to the developing

worldview of Big Data. IoT has blasted onto the stage, interconnecting ordinary articles over the Internet, which goes about as everlasting wellsprings of data. The event has required a blend of three advancements.

Proposed Work:

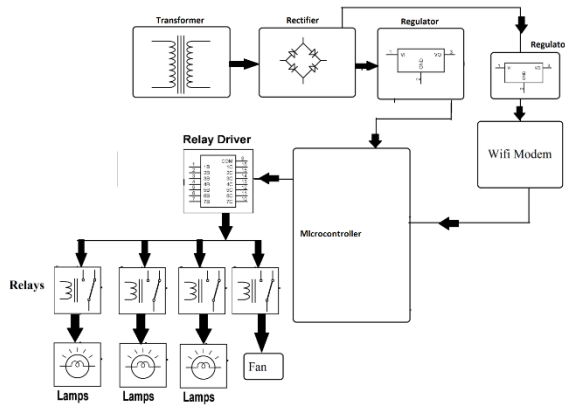


Figure 1: Block Diagram of System

In our proposed system, we have portrayed a working model of the implementation of IOT in the household environment. It encompasses the basic amenities present in a household and offers ways to manipulate the use without any human intervention; that being the basic concept of Internet of Things. A relay of such machines would effectively exhibit the potential and economy of the IoT implementation in the household.

Our proposed system is an arduino based home automation done with Arduino connected to a wifi and controlled via android app. This system deals with the safety in home and smart home technologies which will be cost efficient. Block Diagram of the proposed system is shown in Figure 1.

The block diagram consists of arduino uno, node mcu, two sensors, GSM, servo motor, relay module, fan and button. Here we are using two sensor one is force sensor and the other one is gas sensor, if there is a gas leakage then the electronic sensor i.e. the gas sensor that obeys the principle of LPG sensor senses any gas leakage in home, if any leakage sensed then the output of this sensor goes high. This high signal is monitored by the microcontroller and it will identify the gas leakage. If any gas leakage the microcontroller sends the notification to android phone. When any force is applied in door the force sensor sensing the resistance change then the notification is send to the android phone.

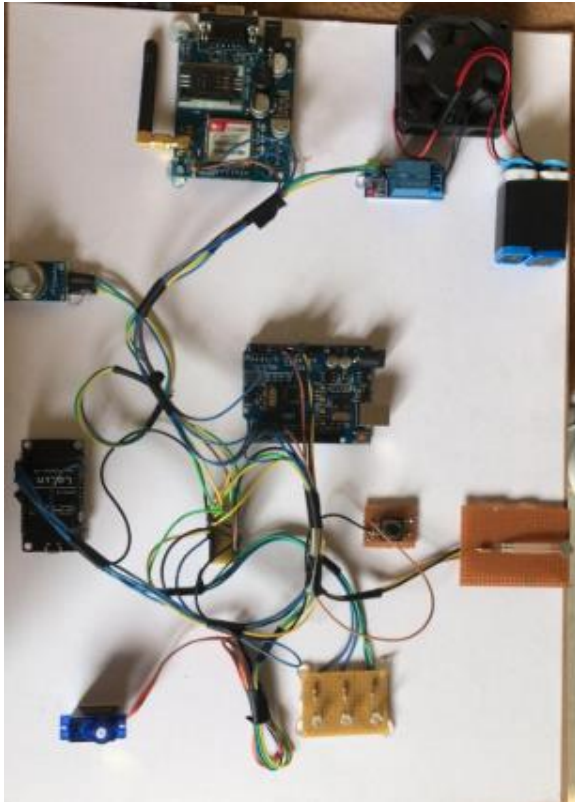


Figure 2: Proposed system

Hardware Description

Arduino UNO

The UNO proves to be Arduino's flagship board for beginner and also for advanced users. The system needs a micro-controller to process data and connects different modules for control. This purpose was solved by Arduino Uno which has ATMEGA328p processor. It has 6 analog input pins and 14 digital input/output pins. It can operate with either 5V from USB plug or 12V from external power supply. In Arduino Uno pin 1 and 0 are used as default transmission and receiving pin.

NODEMCU

NODEMCU (esp8266) has been selected as the controller for this system due to its compact size, compatibility, easy interfacing over several other type of controller including Programmable Integrated Circuit (PIC), Programmable Logic Controller (PLC) and others. ESP8266 is an open source firmware that is built on top of the chip manufacturer's proprietary SDK. The firmware provides a simple programming environment, which is a very simple and fast scripting language The ESP8266 chip incorporates on a standard circuit board. The board has a built-in USB port that is already wired up with the chip, a hardware reset button, Wi-Fi

antenna, LED lights, and standard-sized GPIO (General Purpose Input Output) pins that can plug into a bread board.

MQ-6 SENSOR

This is a simple-to-use liquefied petroleum gas (LPG) sensor, suitable for sensing LPG (composed of mostly propane and butane) concentrations in the air. The MQ-6 can detect gas concentrations anywhere from 200 to 10000 pp. This sensor has a high sensitivity and fast response time. The sensor's output is an analog resistance. The drive circuit is very simple; all you need to do is power the heater coil with 5V, add a load resistance, and connect the output to an ADC. This sensor comes in a package similar to our MQ-3 alcohol sensor, and can be used with the breakout board below.

Force Sensor

As stated above, strain gauges use a simple principle – the resistance of a flexible conductive foil changes when placed under strain. When used in force sensors, strain gauges are attached to a material with known mechanical properties, like steel. When a force is applied to the material, it will deform elastically.

GSM module

GSM module is used in many communication devices which are based on GSM (Global System for Mobile Communications) technology. It is used to interact with GSM network using a computer or any other electronic devices with an interface. GSM module only understands Atmel commands and responds accordingly. The most basic command of this is "AT" if the GSM module responds OK then it is working good otherwise it responds saying a error has occurred like "ERROR". There are various Atmel commands like ATA to answer a call, ATD to dial a call etc. Atmel commands should be followed by Carriage return exclusively.

Conclusion:

The Internet has changed definitely the manner in which we live, moving collaborations between individuals at a virtual dimension in a few settings crossing from the expert life to social connections. The IoT can possibly add another measurement to this procedure by empowering interchanges with brilliant items, along these lines prompting the vision of "whenever, anyplace, any media, anything" correspondences. To this reason, we see that the Internet of Things ought to be considered as a major aspect of the general Internet of things to come, which is probably going to be clearly unique in relation to the Internet we use today.

References:

- [1]. *D. Giusto, A. Iera, G. Morabito, L. Atzori (Eds.), The Internet of Things, Springer, 2017. ISBN: 978-1-4419-1673-0.*
- [2]. *National Intelligence Council, Disruptive Civil Technologies – Six Technologies with Potential Impacts on US Interests Out to 2025 –Conference Report CR 2008-07, April 2008, <http://www.dni.gov/nic/NIC_home.html>.L. Atzori et al. / Computer Networks 54 (2010) 2787–2805 2803*
- [3]. *INFSO D.4 Networked Enterprise & RFID INFSO G.2 Micro & Nano systems, in: Co-operation with the Working Group RFID of the ETP EPOSS, Internet of Things in 2020, Roadmap for the Future, Version 1.1, 27 May 2008.*
- [4]. *INTERNET Auto-Id Labs, <<http://www.autoidlabs.org/>>.*
- [5]. *The EPCglobal Architecture Framework, EPCglobal Final Version 1.3, Approved 19th march 2009, <www.epcglobalinc.org>*
- [6]. *K. Sakamura, Challenges in the age of ubiquitous computing: a case study of T-engine – an open development platform for embedded systems, in: Proceedings of ICSE'06, Shanghai, China, and May 2006.*
- [7]. *M. Presser, A. Gluhak, and The Internet of Things: Connecting the Real World with the Digital World, EURESCOM mess@ge – The Magazine for Telecom Insiders, vol. 2, 2009, <<http://www.eurescom.eu/message>>.*
- [8]. *M. Botterman, for the European Commission Information Society and Media Directorate General, Networked Enterprise & RFID Unit –D4, Internet of Things: An Early Reality of the Future Internet, Report of the Internet of Things Workshop, Prague, Czech Republic, May 2009.*
- [9]. *B. Sterling, Shaping Things – Media work Pamphlets, The MIT Press, 2005.*
- [10]. *ITU Internet Reports, the Internet of Things, November 2005.*