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A Review of IOT based SMS & Email Enabled Smart Home Automation System

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Abstract: ***The Basic concept of Internet of things is based on Layered architecture in which each layer performs a specific task based on technology required for the data transmission, data processing and the data storage. The aim of the Internet of things is to connect peoples with people or with other objects by creating a virtual footprint of all the devices. This technology brings immense changes in everyone's activities, routine and in behaviors. The confidentiality and authenticity of the information is also very crucial. Hence, security is a crucial functionality for the Internet of things, RFID are used. In this paper, we used electronic components such as RFID and networking based feature such as SMS and Email is used, which will help us to provide security as well as the controlling of various objects used in home. The important technologies which enable IoT are RFID systems, Sensor networks and intelligence technologies to design Automatic Smart home automation system.***
Keywords: RFID, sensor network, Internet of things (IoT), data transmission, Processing, storage.

I. INTRODUCTION

Several years ago, a novel paradigm was introduced in the field of wireless communication known as Internet of things. IoT describes the connection of various things or objects present around us such as mobile phones, Computer, pagers & other wireless device with the Internet. The concept of Internet of things has proved its application in various Sectors such as smart cities, energy resource management, transportation etc. Since the IoT becomes very popular and important concept that results in increasing the number of data which is being processed, data storing and transmission of data in different Environments. Since, the Internet of things is having high level of complexity and the use of automatic identification and data capture Technologies increases the risk of compromising with its basic principle of safety due to this from last few years the concept of IoT is investigated continuously. To understand the basic fundamental of Internet of things it is very necessary for us to understand the role of RFID system which is used to identify and establish communication between other devices. Since, IoT depends upon the Wireless Sensor networks, which is used to collect the data, compile the data and process it. As we know this is a Nano-Meter Technology in which number of works has already been done in this field but still investigation is continuously going on to make it more easy to use and also to increase the security of the information, which is being transmitted and received through it. IoT has transformed many aspects of the way we live. For consumers, with the products which are Internet enabled, home automation components, and energy management devices it gives a vision to design “smart home’’, by offering more security and energy efficiency[1].There are various perspectives of IoT is so this can be explained in a different ways and because of the two different words Internet of things that is “Internet” and “things” It can be defined in many ways. IoT is an interconnection of physical systems Such as vehicles, buildings, devices and other Systems with software, network connectivity etc which enables the systems to collect information, also to exchange the data. The Rapid development of Internet of things brought strong connectivity in society in which objects can be directly operated by mobile phones and via Internet. Recently almost, all the local governments’ aims to implement IoT based Smart City, which brings a new revolution in life of the people [4].

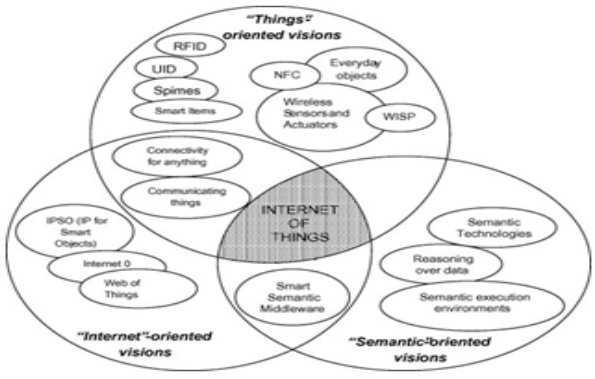

Figure 1: Convergence of different visions of Internet of Things

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II. OBJECTIVES

The main objective of this paper is to design a model. So that via Internet home automation system can becontrolled and this can be done with the help of Arduino and other materials required to design this model [3]. RFID is used to provide security. SMS, Email and other algorithms are used to control the communication between the various devices which are connected to the Internet.

Figure 2: Internet of Things Schematic showing the end users and application areas based on data

A. Buildings and Home Automation

There are various devices used in the home which can be controlled via the internet. Such as lights, AC, fans and TV etc. In this paper, all these objects we need to connect it with the Internet so that by sitting at any place we can control all the devices. Mostly these devices should be controlled based on the room temperature [7]. For IoT, energy optimization is one of the major factors of it.

B. System architecture

In this paper, we use two different architectures that are first home unite block diagram and second security system.

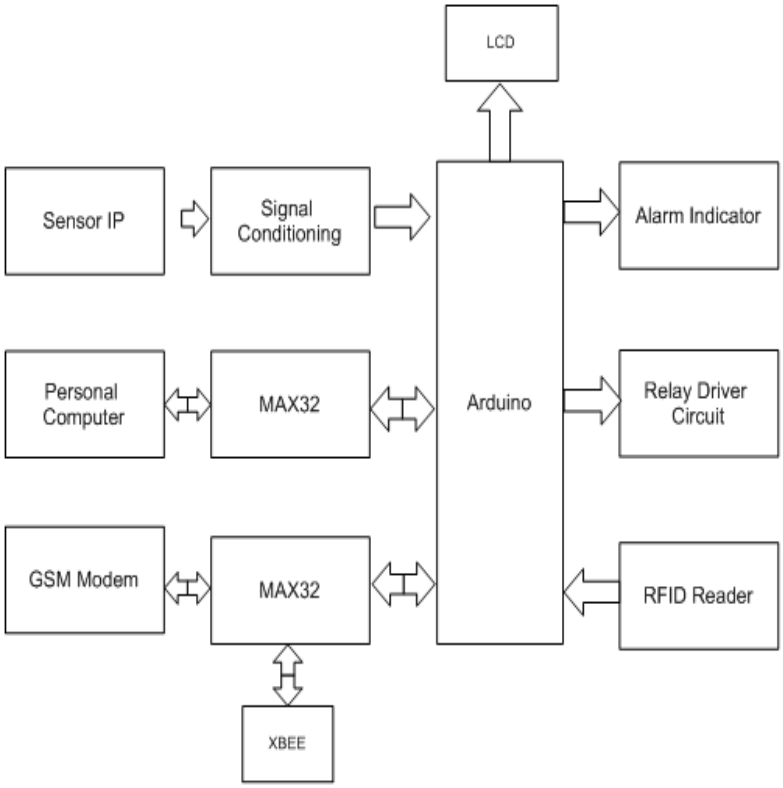

Figure 3: Home Unite block diagram

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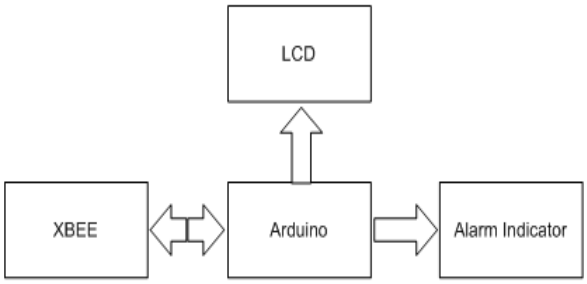

Figure 4: Security system block diagram

In the home unit, I have connected sensors input to Controller (Arduino). The gas sensor is used to detect the leakage of the gas. If gas leakage detected, the exhaust fan will automatically turn on and an alert will get activated, in case if nobody is present at home the GSM module which is connected through the audio now will send a message to the client [10]. The security system gets activated once the leakage signal is received. PIR sensor that is the passive Infrared sensor is used to detect the presence of human being in the room. If PIR sensor is activated it means someone is present in the room and the desired object will remain in on mode but if PIR sensor deactivated means nobody's present in the room it will sense the signal up to 10 to 20 second and then it will turn off all the desired instrument of the room. This will save power consumption of the room which is consumed by the equipment [12]. RFID Technology is also used within in the ground or at the door so that if any trespasser tries to enter in the room or in the lawn this device will automatically send an alert message to the owner, so that owner can take necessary action [13].

III. STEPS INVOLVED

The structure of the system involves various steps:
Initially, this structure contains remote system and client system (Receiver).
The remote system sends Message to the client in terms of verification and the data. Which includes information regarding turn on or turn off any appliances?
The receiver receives the message, decode it and send it to the Arduino (Microcontroller).
The microcontroller issues command to all the appliances and the gadget connected with it Turned on or off accordingly.
Once this process completed the receiver and will send a message to the remote system in form of acknowledgement. So that next message can be sent by the remote the client system.

A. Algorithm

1) If motion sensed by the PIR sensor then Turned ON Ligh
2) *Else:* Keep sensing
3) *End*
4) If MQ5 gas value greater than or equals to 1050thenStart Alarm
5) Else: Keep sensing
6) End if
7) If electromagnetic door sensor lost the line of sight connection for 30sec the Start Alar
8) Else Keep checking
9) End i
10) If temperature less than or equals to 24°C then Turned OFF Fa
11) Else
12) If temperature greater than 24°CtheTurned ON Fan (Speed of Fan increased with the increase in temperature)
13) End if
14) . End if

IV. CONCLUSION

In this paper, we have proposed a method proposed method to design a system by which we can control any appliances by using mobile phones via Internet. Primary scope of this paper includes energy efficiency and environment. Estimated cost of this project is very less as compared to the other methods. An algorithm Based on IoT is proposed for the smart home system to monitor the gas leakage, to automate the Fan, energy observing, etc.

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V. FUTURE SCOPE

This can be implemented in a real home to automate the appliances used in the smart home. In this system, a number of levels can be created such as utilizing automatic movement, include energy meter and water meter for avoiding from extravagance, health care system enhancement etc. we process with the message only, so we can also send the video or voice messages from remoter to the client system.

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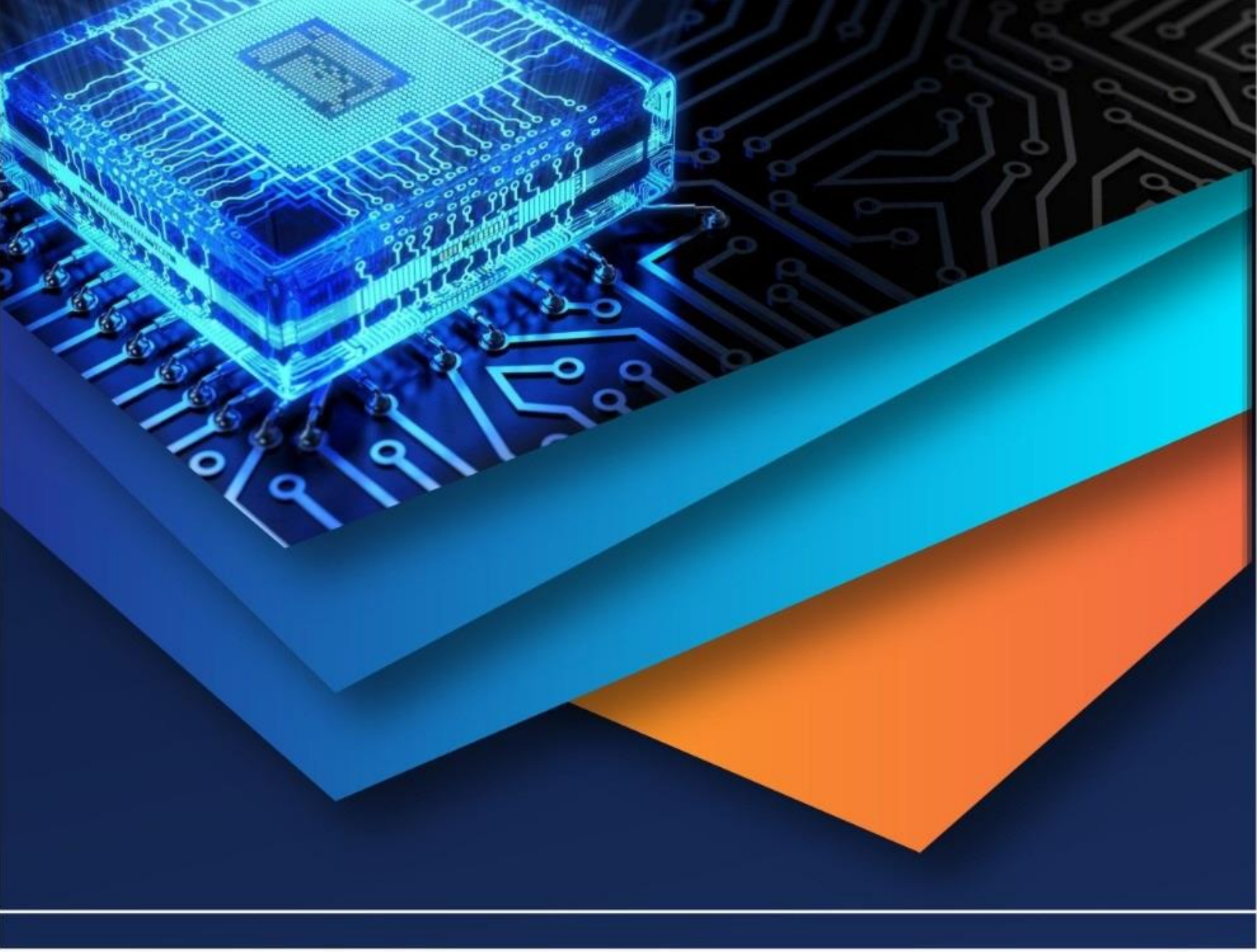

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