



IOT BASED SMART SECURITY AND SMART HOME & INDUSTRY AUTOMATION

J.Nulyn Punitha Markavathi¹, P.Prema², M. Divya³, M. Madhuravani⁴,

¹Assistant Professor, Department of CSE, SVC College of Engineering & Tech, Puliangudi. ²Student, SVC College of Engineering & Technology, Puliangudi.

³Student, SVC College of Engineering & Technology, Puliangudi.

⁴Student, SVC College of Engineering & Technology, Puliangudi.

INTRODUCTION

ABSTRACT

Internet of Things” is fast becoming a disruptive technology business opportunity, with standards emerging primarily for wireless communication between devices and gadgets in day to day human life, in general referred to as Things. This project aims at controlling home & industry appliances and building a smart wireless home & industry security system using Wi-Fi as communication protocol. The Home & industry Automation can be implemented using different types of wireless communication techniques such as ZigBee, Wi-Fi, Bluetooth, GSM, etc. These existing methods have drawbacks as they work in short range. To overcome these drawbacks, we are going to implement this project “IOT based Smart security and Smart Home & industry Automation”. The project focuses on controlling lights and fans referred to as Home & industry Automation and providing Smart security by sending a captured image through an E-mail to the owner using internet when an object is detected. By using “Node MCU” Module we are going to implement this project. This will be more helpful for Handicapped and aged people.

Home & industry automation refers to handling and controlling home & industry appliances by using micro-controller or computer technology.

Automation is popular now days because it provides ease, security and efficiency. In this, a sensor senses the status of appliances and updates to web server. If user is far away from home & industry, he can access and change status of appliances i.e. switches it on/off. User can use local PC. This paper will describe approach of controlling home & industry appliances by using web server. This IOT based smart security and smart home & industry automation systems are trying to achieve comfort combined with simplicity.

Wireless Home & industry security and Home & industry automation are the dual aspects of this project. The currently built prototype of the system sends alerts to the owner over E-mail using the Internet if any sort of human movement is sensed near the entrance of his house. On the other hand if the owner identifies that the person entering his house is not an intruder but an unexpected guest of his then the user/owner can make arrangements such as opening the door, switching on various appliances inside the house, which are also connected and controlled by the micro-controller in the system to welcome his guest. The same can be done when the user

himself enters the room and by virtue of the system he can make arrangements from his doorstep such that as soon as he enters his house he can make himself at full comfort without manually having to switch on the electrical appliances or his favorite T.V. channel for an example. Thus using the same set

of sensors the dual problems of home & industry security and home & industry automation can be solved on a complementary basis. One of the main advantage of this IOT is even though Wi-Fi is not available we can go through 3G or 4G services. In other existing methods it is not possible so, by overcoming all the drawbacks we have implemented a project IOT based Smart security and Smart Home & industry Automation. This project provides more comfort combined with simplicity.

PROBLEM DEFINITION

One of the main reasons for industrial accidents is the leakage of unwanted gases and the death of workers in industries. Leakage of any sort of gases will cause an immense problem in present times whether household, industry, restaurants, etc. a need for a monitor and fault detection is now more required than ever. The proposed system uses an MQ-6 sensor that detects the leakage of LPG, CH₄, and CO gases. The main object of this project is to make a unique device for safely detecting the malfunction of an endangered factory to stop the release of combustible gases to prevent any explosion from taking place while also monitoring a lot of other factors for extra security.

SCOPE OF THE PROJECT

In this industrial monitor and fault detection system, we look closely into the gas leakage detection of some variety gases such as LPG, CO, and CH₄, which causes various health problems and also has a possibility of an explosion. While taking a look at this we also detect if there are any flames in the nearby area. There is also motion detection up to a point where any type of movement will detect and alert during

emergencies. Throughout the whole range of the system, temperature and humidity readings are taken at infrequent intervals to also keep them in check. Thus, we cover a certain range in the factory, monitoring various factors that may lead to a threat or an emergency in automated factories that use processes that are expensive and difficult to modify often.

LITERATURE SURVEY

Different control technologies are used for monitoring and control of the systems, whereas the communication between a system and a user is generally realized online via wireless communication techniques such as RF, ZigBee and Bluetooth. Also, SCADA programs are utilized for developing user interfaces. However, SCADA programs do not provide adaptability for users because of their expensive libraries. RF, ZigBee and Bluetooth technologies are widely preferred in easy-to-use applications due to the short range between the sender and the receiver, and the small volumes of data transferred. The ZigBee, RF and Bluetooth wireless communication techniques are generally restricted to simple applications because of their slow communication speeds, distances and data security

Nowadays, timer controlled systems have been easily replaced with remote controlled systems after the internet became widespread. In these systems, it is known as an important issue to get information about not only the control, but also the conditions of the machines or devices through internet. In accordance with this need, there are some works about implementation of condition monitoring

of system through internet and development of internet-based remote controlling or monitoring practices. It is observed that many systems were used for controlling and monitoring processes. There are some successful examples such as PLC SCADA based fault detection and protection system is implemented which provides the web based user interface for remote control and monitoring was developed and presented online to users. Monitoring of various industrial parameters based on ZigBee protocol has been implemented to monitor the temperature, water level and various current and voltages ratings

EXISTING METHODS

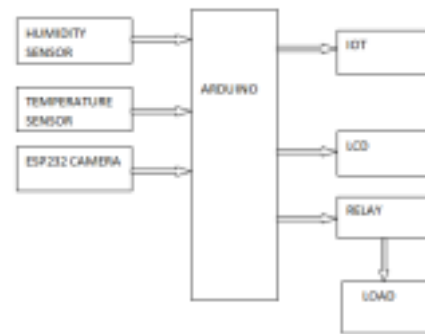
Home & industry automation systems using smartphone, Arduino board and Bluetooth technology are secured and low cost. A Bluetooth based home & industry automation system proposed by R.Piyare and M.Tazil . The Bluetooth system uses a PC or smartphone as receiver device. It has a high communication rate, great security and low cost, so it can be implemented as a real time system. Bluetooth network has limited range of 10 meters if the smartphone is out of range, then it will not be able to control the home & industry appliances, this is one of the main disadvantages of Bluetooth based home & industry automation system

PROPOSED SYSTEM

Industrial monitoring and control is a combination of architectures, mechanisms, and algorithms used in the industrial factory for monitoring and control the activities of industrial processes, motors, machines and devices employed in industry premises to achieve the goal. Though it sounds good enough to have a smart industrial environment in the near future but it will also have to face hurdles of handling big data as all the devices will communicate with each other and exchange their information over a common-platform. The present project is focused on Industrial applications that will be continuously monitored through a set of sensors that constitutes a sensor module. The sensor module collects the relevant data to determine whether the applications to be monitored are working well under certain threshold values. The data from various sensors in the sensor module is fed to the controlling device basically a microcontroller.. The controlling device simultaneously forwards data to the main server. The main server located at the industry premises displays the corresponding data received from the controlling device. An arrangement of accessing the main server remotely by mobile users

can be achieved through TCP/IP protocol, thus monitoring of the applications can be done through remote access.

BLOCK DIAGRAM



The project's design process is based on data, which is collected through several sorts of sensors like Temperature sensors, gas sensors humidity sensors. These sensors are installed in the required locations, such as where the gas has leaked.

The temperature and humidity sensors are used to display the readings, the temperature sensor is used to detect fire, a. These sensors gather data continuously and communicate it to the microcontroller(Arduino UNO). Arduino UNO is programmed with a specific threshold value. If the value is less than the threshold, the situation is normal. If it exceeds the threshold value, the Arduino UNO sends a signal to the corresponding output. If the gas is leaking, t. Anyone who enters the industry without being allowed is tracked using a sensor. On the LCD panel, all data is shown 24*7. Over IoT, data is sent and shared utilizing a Wi-Fi module.

CONCLUSION

This project has presented the design and implementation of Internet of things for monitoring and controlling of various application and parameters in home and industries using nodumcu wireless communication technique. The key idea of the proposed work is to provide flexible and long distance connectivity between industrial environment and user. The advantages of the developed system are to have a continuous monitoring over industrial applications and

also control them if going beyond their threshold conditions. Future work will focus on improvement of above proposed work and adding features to make a reliable smart Industrial monitoring and controlling system

REFERENCE

- 1] “Real-Time Monitoring and Control of the Parameters of an Induction Motor”, Department Of Electrical and Electronics Engineering, Technology of Faculty, Gazi UniversityTeknikokullar Ankara, Turkey
- [2] “Remote Controlling and monitoring of Induction motors using internet”, Abdulkadir, Cakır, Hakan Cali’s, Gokhan Turan Suleiman Demirel University, Faculty of Technology, Department of Electrical and Electronic Engineering, Isparta Turkey
- [3] “Research on remote wireless monitoring system based on GPRS and MCU” , L. Zhong-Xuan, J. Xiau Yu, H. Zhao-Fu, Z. Yan-Tao, D. Meng,Int. Conf. Computational Problem Solving ICCP 2010, Lijiang, China, Dec.
- [4] Akatsu K. and Kawamura A., (1999), —Sensor less very low and zero speed estimations with on-line secondary resistance estimation of induction motor without adding any signall, Proc. IEEE Ind. Applicant. Soc. Annual. Meeting, pp. 187–193.
- [5] D. S. Ghataoura, J. E. Mitchell, and G. E.Match, “Networking and application Interface technology for wireless sensor network surveillance and Monitoring,” IEEE Commune. Mag., vol. 49, no. 10, pp. 90–97
- [6] H. A. Thompson, “Wireless and Internet communications technologies for monitoring and control”, Control EngineeringPractice, no. 12, pp. 781– 79, 2004
- [6] H. A. Thompson, “Wireless and Internet communications technologies for monitoring and control”, Control EngineeringPractice, no. 12, pp. 781– 79, 2004