

Iot Based Society Automation Using GTBS Protocol

Krushnachaitanya S. Sargam², Suchitra S. Mhetre³, Vinay S. Gadade⁴, Tanuja M. Jawale⁵

Prof. Ayub Mulani, dept. of Electronics and Telecommunication Engineering, KSE Pune, India

²³⁴⁵UG Student, dept. of Electronics and Telecommunication Engineering, KSE Pune,India

Abstract – As we know humans are using technology to make everything easy, fast with also security. In industry the use of technology is increasing for various applications, but very low has been done towards the society automation. The automation is technique which gives us numerous benefits today. Society automation is also one of the use of this technology. the concept focus on to control and monitor gate security with home applications. Wireless Sensor Network(WSN) is widely using for sensing in all type of automation applications. We are also focusing on concept of the operation of monitoring and controlling home applications facilities the information on smart devices in residential buildings.

Key Words: Iot technology, automation system, sensors, GTBS, WSN,Android Application.

1. INTRODUCTION

The IOT technique is becoming very popular because the IoT is a technique where network connectivity is capable to connect with objects, Sensors and its also allowing devices to communicate with each other for better system. The greatest advantage of IOT is the process is done with minimal human interface.

The internet is not a new topic for a world but now a day's its very emerging topic. By various articles of internet and WSN it is proved that the service they gives us is It will become more easier in future and also it is very helpful for elder and disabled personal to live and make their life normal like others.

Buildings consume almost 70% of the total electricity generated in the flat Commercial buildings and their shares of energy of utilizing are project to increase further as comparing to residential society. The concept is easy but very important and potentially strong. In starting of 2000's Kevin Ashton wrote that the world will fully depend on Internet of Things (IoT). RFID and sensors technology will control and monitor daily life world without the limitations of human-entered data.

The homes of 21st century will become more secured and self controlled with automation due to the comfort that provides by WSNs and IoT. The automation means that allow user to control Electric appliance and various kind of home equipment from anywhere.

Objectives

Our aim in this project is to design a Wireless Sensor Network to establishing a intelligent building. By using GreenTask Based Scheduling (GTBS) algorithm we designed to reduce power consumption. This system is to design to monitor effectively and control electrical appliances and home equipment using IoT.

Scope

It has been difficult to work manually in feeding of small parts like dowel pins , small nuts , castle nuts etc. By providing feeding mechanism it becomes easy to use by the operator as well as it gives high performing part feeding mechanism. This automation is beneficial for industrial sector to achieve lower error rates and less power consumption, better profits, better rate of efficiency and less dependency of man power.

2. Methodology

In this system using rf modem and WSNs it is possible to collect and analyzed up to date data faster accurately and more efficiently. The wireless sensor is device which identify and measure the signal or data and send it to the processor.

Block Diagram

In this system we designed two terminal's i.e

A] Gate Terminal

The block diagram shows that gate section. The user has to shows rfid tag to reader the microcontroller Reads the 10digit number of that card and compares it with data basestored in internal memory. If password will match then access will granted. The user gets notification on android application.If does not match the gate remains close.

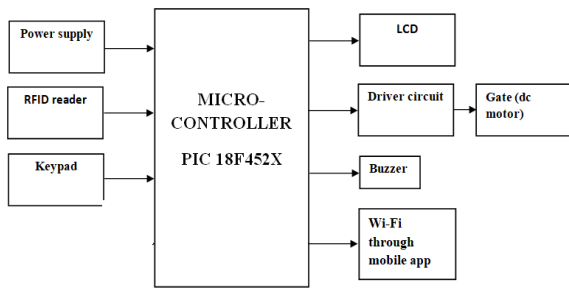


Fig-1: Gate Terminal

B] Flat terminal

In this section, we interface various sensors to the microcontroller via signal conditioning circuit. The sensor may include:

Fire: We are using bimetallic strip as a fire sensor to detect any fire in the flat.

Gas: We are using MQ-6 gas sensor for detecting gas leakage in flat.

Foot S/W: For the intruder Alert

Panic S/W: For In house patient.

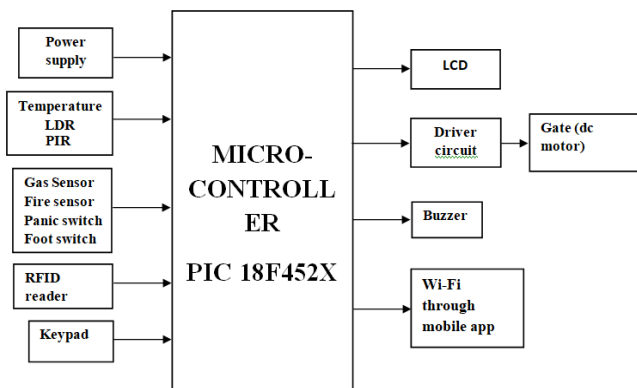


Fig-2: Flat Terminal

WSN Protocol

We are configuring WSN using rf by considering 1 master and 2 slaves structure. The master will continuously scan for both the slaves. The data is directly gathered from slaves if the both are in range. But the master will reconfigure the network if any slave going out of range of receiver and read the data using intermediate slave as repeater to receive the data.

GTBS Protocol

For many application in WSN have redundant data, which means data is does not change very fast. Here we are implementing Green Task Based Sensing Algorithm for Smart Sensor. In most of the application local condition do not change over a long period of time so sensing the same data over and over less network life and required more

energy. So by using GTBS algorithm the sensor senses the data and sends to the microcontroller when the conditions are not normal. Also we are designing Android app through which we can monitor the sensor data. We are connecting sensor to android device by Bluetooth modem.

2.4 Flow Chart

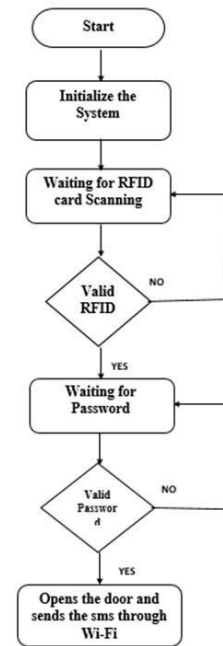


Fig-3: Gate Terminal

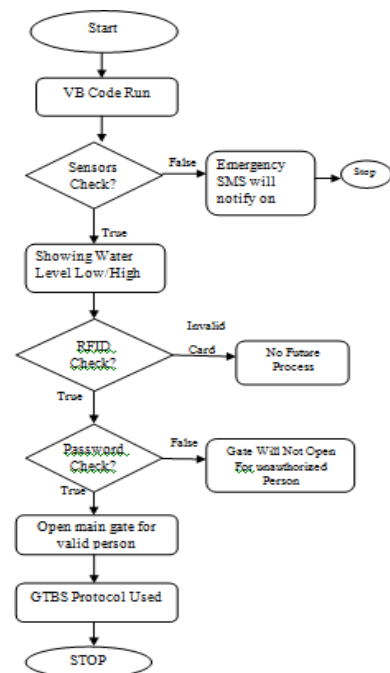


Fig-4: Flat Terminal

Hardware Requirement

- PIC 18F4520
- Sensors: Gas(MQ6), Fire(Bimetallic strip),Panic /Foot Switch
- Display: 16*2 LCD

Software Requirement

- Embedded C
- MPLAB IDE,HT-PIC Compiler

3. CONCLUSIONS

We conclude that a smart sensor network for monitoring and control of society automation is designed. The developed system can be monitor and control accurately without human interface. This society automation using wsn and gtbs protocol has been experimentally proven to work efficiently by easy appliances to it and the application were successfully control automatically through internet. By this system we conclude high level of security can be achieve with the use of automation.

4. ACKNOWLEDGEMENT

We would like to thank the principle and HOD of Electronics and Telecommunication Department of Keystone School of Engineering Pune, India for their support. Excellent Guidance of Guide, Staff Members and co-operation of non-teachings staff is also valuable for us to make this project successful

REFERENCES

- [1] Nagender Kumar Suryadevara, Subhas Chandra Mukhopadhyay, Sean Dieter ,Tebje Kelly and Satinder Pal Singh Gill, "WSN based smart sensors and actuators for power management in intelligent buildings", IEEE Transactions on mechatronics, Vol. 20, No. 2, April 2015.
- [2] A. Alhalafi, L. Sboui, R. Naous, B. Shihada, "gTBS: A green Task Based Sensing for energy efficient Wireless Sensor Networks," in Conference on Computer Communications Workshops. IEEE, 2016, pp. 136 – 143.R. Nicole, "Title of paper with only first word capitalized," J. Name Stand. Abbrev., in press.
- [3] A. Alhalafi, L. Sboui, R. Naous, B. Shihada, "gTBS: A green Task-Based Sensing for energy efficient Wireless Sensor Networks," in Conference on Computer Communications Workshops. IEEE, 2016, pp. 136 – 143.
- [4] Y. Agarwal, B. Balaji, R. Gupta, J. Lyles, M. Wei, and T. Weng. Occupancy-Driven Energy Management for Smart Building Automation. In ACM Workshop on Embedded Sensing Systems For Energy-Efficiency In Buildings, 2010.

BIOGRAPHIES



Krushnachaitanya S. Sargam
Student of Keystone School of Engineering



Suchitra S. Mhetre
Student of Keystone School of Engineering



Vinay S. Gadade
Student of Keystone School of Engineering



Tanuja M. Jawale
Student of Keystone School of Engineering