

## IOT Industry Protection System Using Arduino

Ashwini<sup>1</sup>, Prateeksha U Shanbhag<sup>2</sup>, Pranitha PreemaCrasta<sup>3</sup>,  
Shreeraksha.P<sup>4</sup>, Prof.Pragathi Hegde<sup>5</sup>

<sup>1</sup>Information Science and Engineering, Canara Engineering College, Mangalore, India

<sup>2</sup>Information Science and Engineering, Canara Engineering College, Mangalore, India

<sup>3</sup>Information Science and Engineering, Canara Engineering College, Mangalore, India

<sup>4</sup>Information Science and Engineering, Canara Engineering College, Mangalore, India

<sup>5</sup>Assistant Professor Information Science and Engineering, Canara Engineering College, Mangalore, India

### Abstract

Mass Internet of Things (IoT) plays a key role in the new generation of industrial automation systems (IASs). Evolving IoT standards if effectively used may address many challenges in the development of IASs. However, the use of the IoT and the REST architectural paradigm that IoT is based on is not an easy task for the automation engineer. In this paper, a model driven system engineering process is adopted for IASs and it is extended to exploit IoT standardization efforts in IEC 61131 based system. IoT is considered as an enabling technology for the integration of cyber-physical and cyber components of the system and humans, bringing into the industrial automation domain the benefits of this technology. A UML profile for IoT is exploited to automate the generation process of the IoT wrapper, i.e., the software layer that is required on top of the IEC 61131 cyber part of the cyber physical component to expose its functionality to the modern IoT IAS environment. A prototype implementation and performance measurements prove the feasibility of the presented approach.

**Keywords:**Industrial Automation Thing, Internet of Things (IoT), UML profile for IoT (UML4IoT), IEC 61131.

### I. Introduction

As the society is growing with various developments, the outmoded forms of storing various food products in cold store rooms fails to satisfy human need. Through the monitoring of the temperature and humidity inside cold storage rooms, the goodness of the products can be ensured for a longer time. Recent research has revealed that operations of wireless sensor systems are largely affected by their on-board temperature [1]. We can implement sensors in wide area over the machines and instruments and control and monitor the circumstances by using concept of IoT [2]. As we are making use of Internet the system becomes secured and live data monitoring is also possible using IoT system [3]. In this paper we have designed a gateway which will be the central part of this whole system. The function of the gateway is to gather data, process them, upload them and process user control information. If the network connection is not established then the data will be stored and upon reestablishment of the network it will be uploaded. The terms of "things" in the IoT vision is very broad and includes a variety of physical elements. The terms of things include portable personal items such

as smart phones, tablets be connected to the Internet, each providing data and information and some even services. With the rapid increase in the number of user of and digital cameras. Furthermore, IoT includes elements of our environments (be it home, car or office), and things equipped with RFID tags connected to a gateway device. From those mentioned so far, a huge number of devices and things will be connected to the Internet, each providing data and information and some even services.

## II. Implementation

We implemented the system using iot concept.

### System Diagram

In this proposed system, the main concern is to implement and design a multi sensor based IoT platform for air, sound and water quality real-time monitoring. Main focus of this system is high & fast sensitivity, low cost and low power consumption with two way power system. This proposed system provides a special advantage where everyone sensor connected with a input pin within a central unit based microcontroller for sensing quality parameters value .The proposed central unit based microcontroller system ensures that it can be easily expanded, customization and allows customization options as user requirements, simple, accurate result, easily maintenance and cost-effective, Email alert and SMS alert before the pollution occurs, If the device are disconnected with cloud, user get a Email alert within 5 minutes . The proposed system is a platform which allows multi-parameters analysis of air, gas, sound and temperature's the proposed system offers better efficient and differentiate with existing system. The pollutants when released from industries or when fire is detected the system gets activated. When carbon di oxide goes above the defined level or threshold value the system gives an alarm to the authority. If the authority does not take any actions system automatically stops the motors. Similarly, when \_re is detected an alarm is given and if no actions are taken by the authority automatically exhaust fans will get on. The Leaked is detected and after the alarm if no actions are taken the boilers are switched off. This system is also monitored using IOT the internet of things.

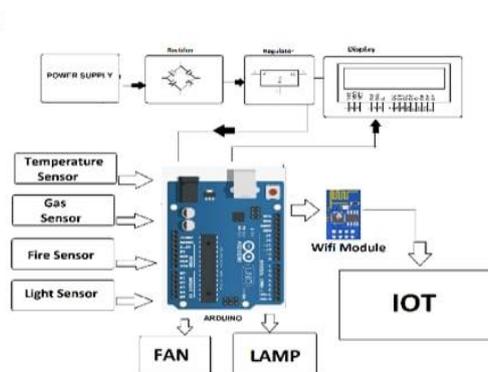


Fig 1: System Diagram

Whenever the parameters cross the limits the values are updated. These updated values can be viewed anywhere and anytime by opening the link given through internet. The inputs from sensors given are interfaced with IOT

and made available online all the time so anyone who has the link can view the condition of the parameter. Methodology Description is shown in **Figure 1**. This type of system can help in Industrial Automation using IoT, with the help of which we can take intelligent decisions.

### III. Result

#### Login Module

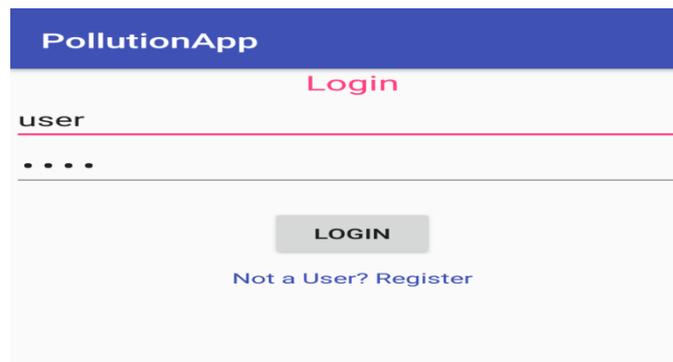


Fig 2: Login Module

Fig 2 shows, User login where any user can login using their user name and password. If the username and password is not stored in database then he/she has to and login to the system.

#### Home Page

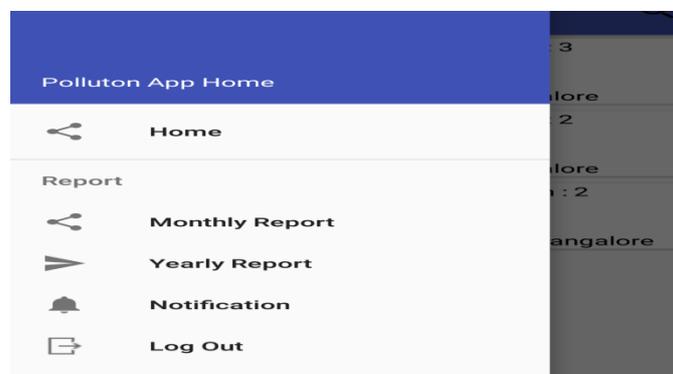


Fig 3: Home Page

Fig 3 shows home page in android app. It has options like monthly report, yearly report, notification and logout user can select any one option

### User Registration

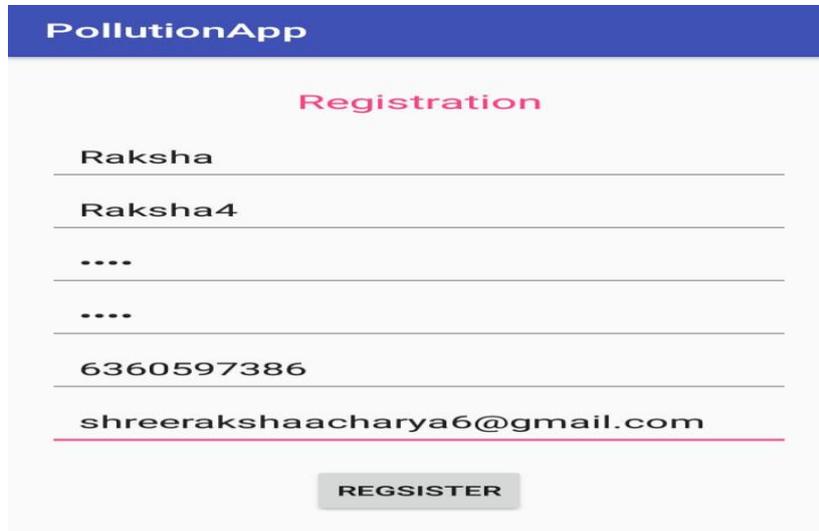


Fig 4: Registration Module

Below Fig 4 show the User Registration for the android app. User can register by entering his/her name, user name, password, phone number and e-mail id. After registration users details will stored in database.

### Monthly Report

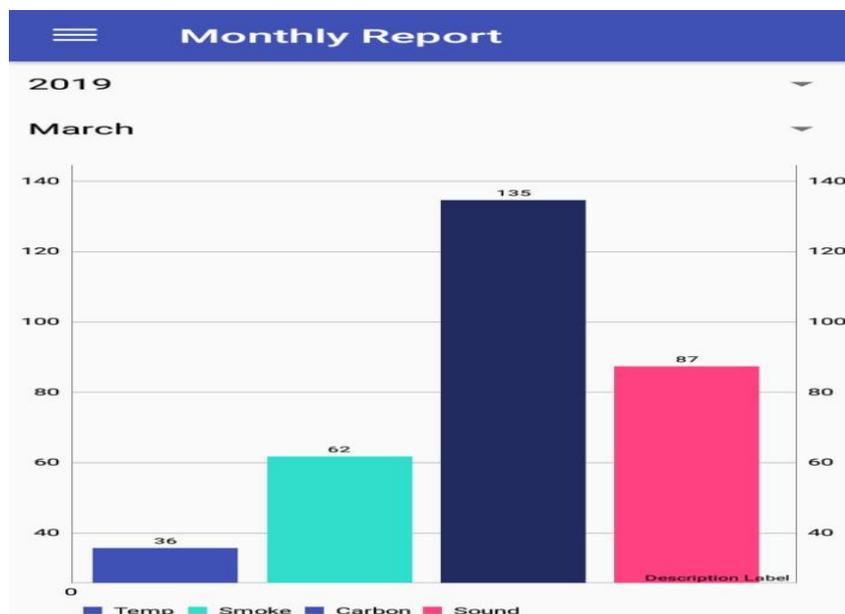


Fig 5: Monthly Report

Fig 5 Monthly report for the variation in temperature, gas, carbon, sound. The variation is showed in the form of graph.

**Yearly Report**

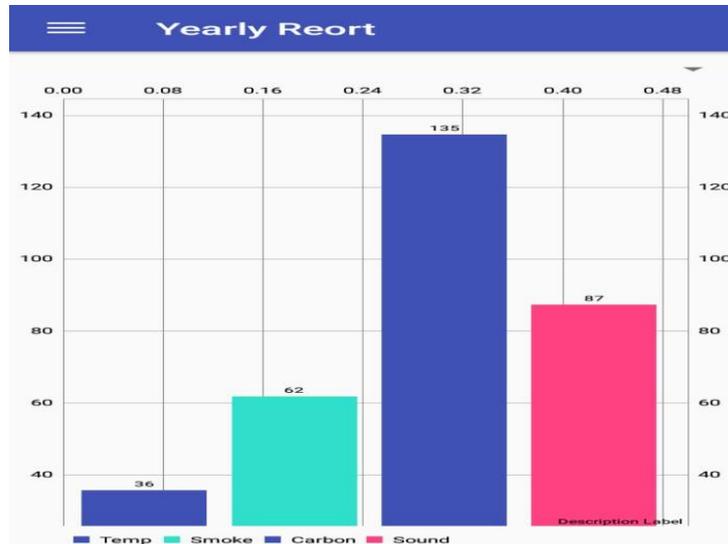


Fig 6:Yearly Report

Fig 6 shows the Yearly Report. Which shows the variation of temperature, gas, carbon and sound for the selected year.

**Notification**

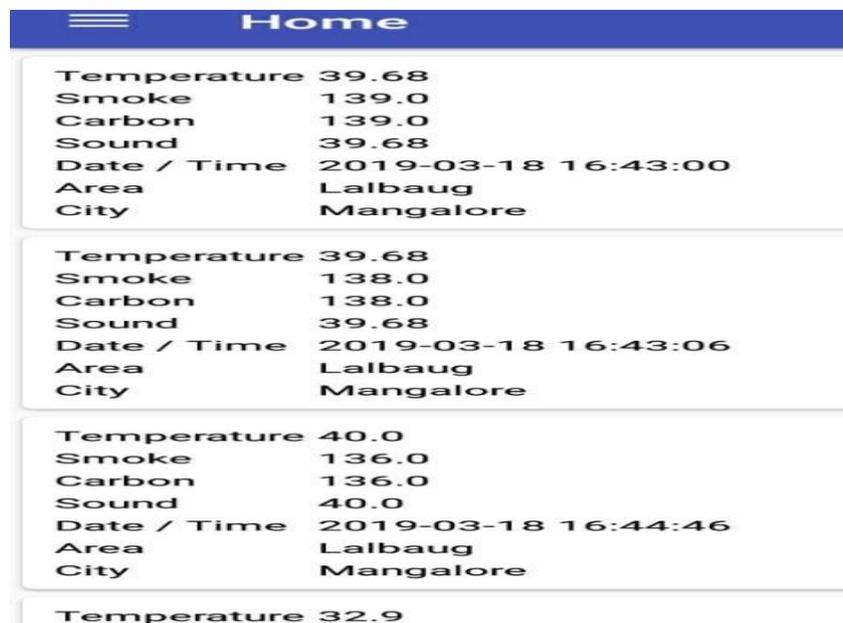


Fig 7: Notification

Fig 7 shows the Notification,Which shows the notification of variation of temperature, gas, carbon and sound.

## Conclusion

The wireless sensor networks are connected with the internet with the help of the IoT gateway and also ensure the monitoring of the products inside cold store rooms. Also this type of application helps in checking the temperature and humidity on a continuous basis and then resulting instructions are sent to the server. Based on which the environment inside the store rooms can be monitored. This type of system can help in Industrial Automation using IoT, with the help of which we can take intelligent decisions.

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