IOT Based Air Pollution Monitoring System

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ABSTRACT

*An Air Pollution Monitoring System Based on IOT in which using intenet we will monitor the air quality on web server and System will give a alarm when the air quality poor at some extent level, means when there are some amount of harzardous gases are present in the air like CO2, smoke, alcohol, benzene and NH3. It shows the air quality in PPM on the LCD display and as well as on webpage so that we can monitor it very easily. We have use MQ2 sensor for Smoke detector and the MQ6 sensor for LPG detector. But Now we have used MQ135 sensor which detect harmful gases and measure their amount. In this IOT project, you monitor the pollution level from anywhere using your mobile or computer. We will deploy this system anywhere and can also give alarms to some device when pollution exceeds certain level, like we can send alert SMS/mail to the user***.**

Keyword : *- Air quality monitoring, Wireless sensors network.*

1. INTRODUCTION

The Objective of IOT Based Air Pollution Monitoring System is that to Monitor air pollution which is exist in Environment.Now a days it is necessary to Monitor air quality for healthy living for all humans. Due to air pollution harmful effects occure on human health that include some allergic reaction of nose and eyes.some serious problem are also occures such as asthma,heart diseases,bronchitis.to avoid this problem there is need of monitor the air pollution. The system uses different types of sensors. The System wirelessly communicate to an intelligent sensing platform that consists of several modules. The modules are receiving and storing the data, preprocessing and converting the data into useful information and finally presenting the acquired information through different channels, such as mobile application, Web portal, and short message service. The system focus on monitoring system.

1.1 OBJECTIVE

1) To increase the air quality index.
2) To detection of toxic gases causes due to vehicular emission and ltration of that gases.
3) To analyze toxicity at signals in metropolitan city and generate the reports.
4) To reduce the toxicity by purifying air and increase the life-span of living things.
5) To display real-time forecasting of Pollution.

1.2 SCOPE

A project present prototype to achieve accurate monitoring, which would be feasible, portable and provide remote access to sensed data. Pollution monitoring should not be the sole responsibility of the government and systems should be available to make citizens aware of the pollution content in the area and take steps to reduce the pollution.

2. LITERATURE SURVEY

Some of the research papers are studied to get knowledge of latest technology and implementation design. Following table shows list of these articles along with some researches which we are studying these papers.

Sr. No.	Title	Author	Year
1	IOT Based Air Pollution Monitoring System	K.Nirosha, B. Durgas-ree, N. Shirisha	2017
2	Review Paper on Air Pollution Monitoring system	Snehal Sirsikar, Priya Karemore	2015
3	Micro Sensor Node for Air Polutant Monitoring : Hardware and Software Issues	A focus of attention With increasing reports of health problems related to poor atmospheric conditions.	2009

2.1 EXISTING SYSTEM

The researchers have proposed various air quality system.this system based on WSN,GISand GSM.The commercial meters available now a days.
1] Amprobe CO2 meter used for to take measurment of CO2 present in Environment.
2]Fluke CO-220 carbon monoxide meter for CO.
3]ForbixSemicon LPG gas leakage sensor alarm for LPG leakage detection.

2.2 PROPOSED SYSTEM

In our proposed system we used sensors to survey goal area pollutants in air. These system developed by using Raspberry pi 0W board and on that there are different sensors are used to analyse or study environment. We used following Gas Sensors to senses the Hazardous gas and sends the notifcation.

MQ2: It useful for gas leakage detection.Gases such as LPG,H2,CH4,CO, Alcohol, Smoke.

Fig -1:MQ2

MQ7: It senses CO concentrations in the air

Fig -2:MQ7

MQ5: It senses gases such as LPG,H2,CH4,CO,Alcohol, Smoke.

Fig -3:MQ5

MQ9: It senses LPG, CH4 in the air.

Fig -4:MQ9

MQ135: It senses benzene, alcohol, smoke in the air.

Fig -5:MQ135

In this system we can easily analyse Industrial Environment or any area using sensors embedded with the system. In this project we are going to make an IOT based air pollution monitoring system in which we will detect and monitor the Air Quality Index over a web server. There are some amount of hazardous gases are present in the air like CO2, smoke,benzene,alcohol. It shows the air quality index in PPM on the LCD display and on webpage and also on dashboard so that we can monitor it from remote location very easily.

3. SYSTEM ARCHITECTURE

In the design phase the architecture is establish. This phase starts with the requirement document delivered by requirement phase and maps the requirements into architecture. The architecture defnes the components, their

interfaces and behaviors.The deliverable design document is the architecture. The design document describes a plan to implement the requirements.

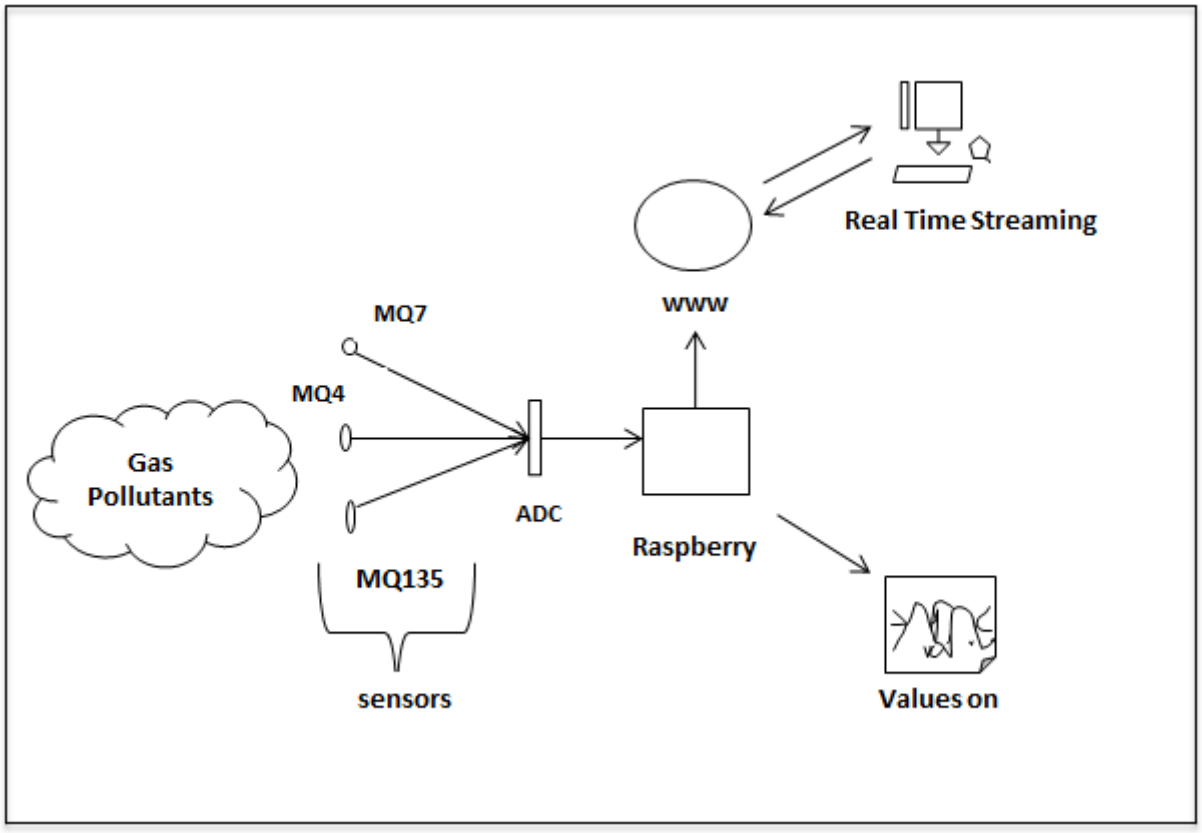

fig-6: System Architecture

3.1 WEB APPLICATION

Cloud Server

A Cloud server is Virtual and powerful infrastructure.Virtualization Software divide physical server into virtual server to create cloud server.Cloud Server is use for Application and Informaton processing storage.Organization use an infrastructure-as-a-service(IaaS) model to process workloads and store information.They can access virtual server functions remotely through an online interface.

MQTT Protocol

MQTT (Message Queue Telemetry Transport) protocol is a Machine to Machine protocol widely used in iternet of things,The MQTT protocol is a message based protocol,extremely light-weight and for this reason,it is adopted in IOT ecosystem.almost all IOT Platforms support MQTT protocol to send and receive data from smart objects.There are several implementation for different IOT boards like Arduino,Raspberry and so on.

4. CONCLUSIONS

This system is built to monitor the air quality index of environment using RaspberryPi0W Processor, IOT Technology is used to detect quality of air. With the use of IOT technology enhances the process of monitoring various aspects of environment such as air quality monitoring issue proposed in this system. Here using of MQ135

gas sensor gives the sense of different type of dangerous gas and RaspberryPi is the heart of this project which control the entire process WiFi module connects the whole process to internet and Desktop or Mobile is used for the visual Output. We have partially completed design modules of the system and until the end of February we will complete our project.

6. REFERENCES

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