Modelling Traffic Congestion Based On Air Quality for Natural Environment

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ABSTRACT: Over the years, vehicle population has increased steadily leading to heavy traffic as well as air pollution. The Emissions of many air pollutants have been proved to have variety of negative effects on public health and the natural environment. Hydrocarbons are a major contributor to smog, which can be a significant problem in urban areas. Prolonged exposure to hydrocarbons contribute to asthma, liver disease, lung disease, and cancer. Moreover, cases of unlicensed drivers are increasing various reasons like craze for driving, racing, etc. This results in accidents due to the uncontrolled driving pattern of the drivers. In the present work, an attempt has been made to regulate the traffic congestion based on the air quality at that point of time using RFID and IOT on a real time basis. Firstly a gas sensor (MQ-4) is installed in the vehicle which senses the presence of natural gas, especially released due to fuel combustion. This data can transferred to the control room where it can be used to regulate traffic congestion. Secondly, to prevent unlicensed people from driving and also vehicle robbery, a RFID reader has been implemented. Further, a tri-axial accelerometer is installed in the vehicle to monitor uncontrolled driving.

I.INTRODUCTION

The vehicles emits hazard gases which are very harmful to the environment which directly affects the human beings and leads to varies diseases and also contribute a large amount of pollution on earth. This project attempts to develop an effective solution monitoring and controlling by using RFID and IOT on a real time basis namely real time wireless air pollution controlling system. Commerically available gas sensors for sensing concentration of gases like CO_2,CO are calibrated using appropriate calibration technologies.

II. LITERATURE SURVEY

The estimation of air pollution concentrations from road traffic by HICKMAN,A J,COLWILL,D M. The paper describes the method of estimating pollutant concentrations around highways which uses the Gaussian dispersion theory with empirical modification so that it more accurately represents the roadside situation and maintenance the air level.An environmental air pollution monitoring system by N.KULARATNA,B.SUDANTHA. The system measures the concentration of gases . It is capable of worning when the pollutant levels exceed predetermined maxima level and the system can be developed into low cost version for developing countries

III.PROPOSED SYSTEM

The proposed system is to control the air pollution by using modern technology.Gas sensor to detect the amount of Smoke released in the vehicle. If gas level exceeds the threshold value warning is given to particular user. First time and second time it will intimate via buzzer, message to the user and updated in the server via cloud using IoT technology using GSM, After the third time the user license will be terminated and message will be sent to the user about the termination of the license.

IV.OBJECTIVE OF THE PROJECT

The Three main objective of the project is to measure air quality,Direction of the vehicle ,and also checks whether the person is authorized are not.

A.FLOW CHART

A A flowchart is a graphical representation of a process.Each step in the process is represented by a different symbol and contains a short description of the process step.The flowchart symbols are linked together wit arrows showing the process flow direction.
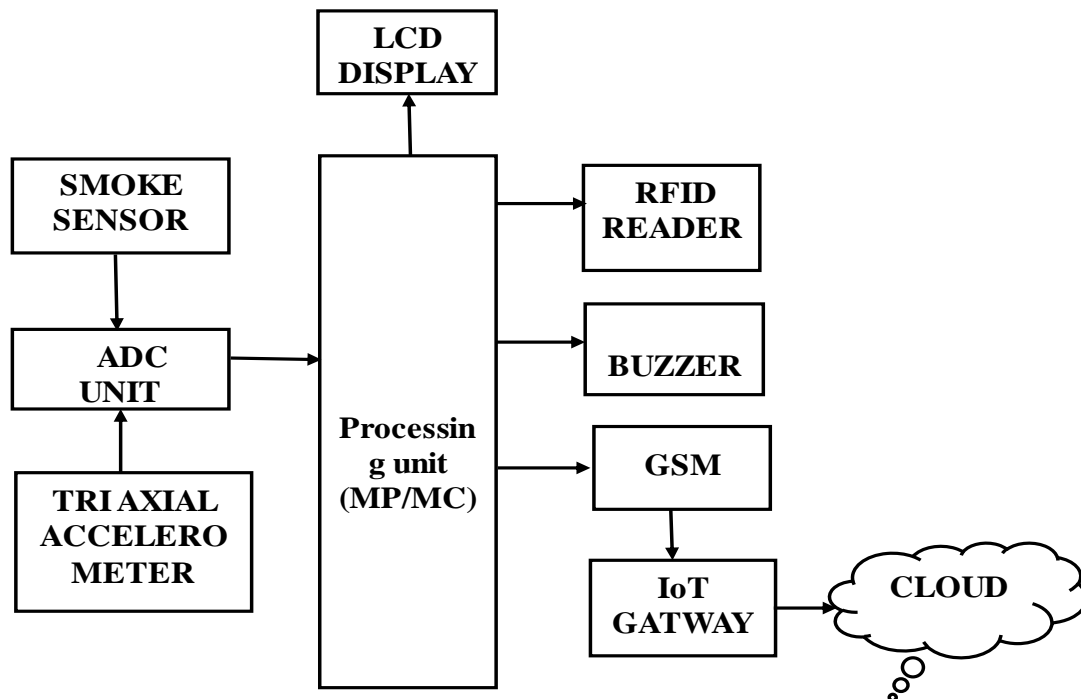
V.HARDWARE REQUIRED

1.GAS SENSOR

MQ2 gas sensor is a robust gas sensor suitable for sensing lpg, smoke, Alcohol, propane hydrogen,carbon monoxide concentration in the air . MQ2 gas sensor module is a great choice for checking Atmosphering air quality.MQ2 gas sensor works on 5V DC and draws around 800mW. It can be detect smoke,LPG,carban monoxide concentration anywhere from the earth for the level of 200ppm to 10000ppm.MQ2 is one of the commonly used gas sensir in MQ sensor series. It is a metal oxide semiconductor (MOS) type gas sensor also know as chemiresistor.when the gas comes in contact with the material , the concentration of gas can be detected**.**

2.RADIO FREQUENCY IDENTIFICATION

It is a technology designed to allow objects, animals and even human beings to be identified, located, and tracked using radio frequency signals.The technology has developed over the years and is now used in a wide range of applications. RFID tags transmit data about an item through radio waves to the antenna/reader combination.They can help keep track of business assets such as test equipment, transport packing, computing technology and other portable devices.
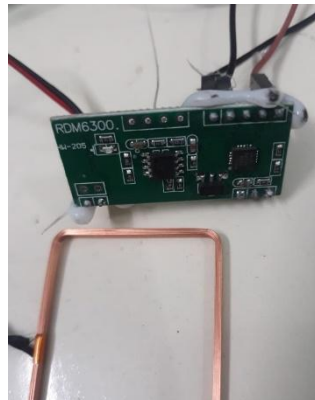
3.TRIAXIAL ACCELEROMETERS:
Triaxial accelerometers provide simultaneous measurements in three orthogonal directions, for analysis of all of the vibrations being experienced by a structure. Each unit incorporates three separate sensing elements that are oriented at right angles with respect to each other.

4.GSM (Global System for Mobile communication) :
It is a digital mobile network that is widely used by mobile phone users in Europe and other parts of the world … GSM digitizers and compresses data, then send it down a channel with two other streams of user data ,each in its own time slot.

VI. SOFTWARE REQUIRED

Keil compiler:

The industry-standard keil c compilers,Macro assemblers,debuggers,real-time kernels,single-board computers and emulators support all 8051 derivatives and help you get your projects completed on schedule.The keil 8051 development tools are designed to solve the complex problems facing embedded software developers

VII. IMPLEMENTATION

When the vehicle starts,the system starts,the MQ4 gas sensor detects the emitted gas and measures the pollution level and displays it on LCD.Moreover,the tri accelerometer displays the direction of the obstacle on LCD.Then using RFID reader scans whether the vehicles of the obstacle is authorized person r not.All those information are recorded in cloud and sent to the control department through Iot gateway(GSM).

VIII. OUTCOME RESULTS

Firstly a gas sensor is installed in the vehicle which senses the presence of natural gas, especially released due to fuel combustion. This data can transffered to the control room where it can be used to regulate traffic congestion. Secondly, to prevent unlicensed people from driving and also vehicle robbery, a RFID reader has been implemented.Furthera tri-axial Acceleterometer is installed in the vehicle to monitor uncontrolled direction.
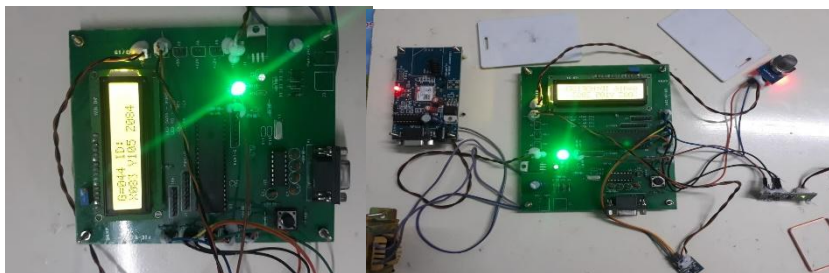
IX.CONCLUSION

Those output information are collected in the cloud and notification is sent to the control department through GSMThe system indicates the pollution level to the driver and also when the pollution level exceeded predefined values,and when the vehicle is stuck in traffic or at traffic signal and is on, it alerts the user.Thus,it will use to control pollution to some extent..

REFERENCES

1."Epidemiological Study on Effect of Air Pollution on Human Health (Adults) in Delhi", Environmental Health Management Series:EHMS/01/2012, Central Pollution Control Board, Government Of India.
2.Anita Kulkarni, T. Ravi Teja, "Automated System for Air Pollution Detection and Control in Vehicles", International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, 2014.
3.H. Prasanna Kumar, Chaitanya H P, "Automated system for air pollution detection and control of speed in vehicles", International Journal of Advances in Engineering and Technology, 2016.
4.G. Wang, F. Van den Bosch, and M. Kuffer, "Modelling urban traffic air pollution dispersion." ITC, 2008.
5.T.Wong,W tarn, I,Yu,A.Wong,A, lai, S.Ng D.Yeung,and C . Wong "A Study of the air pollution index reporting system,"Final Report,Tender Ref .AP,pp.07_085,2012.