Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY
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IOT ENABLE GAS LEAKAGE DETECTION SYSTEM

Group No. 02

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Project Guide and Co-guide
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Abstract

- The aim of this project is to present such a design that can automatically detect and also stop gas leakage in vulnerable premises

- To stop accident associated with the gas leakage is to install gas leakage detection kit at vulnerable places.

- Gas leakage is a major problem with industrial sector, residential premises and gas powered vehicles.

- Gas leakage system consist of GSM module, which warms by sending SMS.

- The Particular gas sensor has been used which has high sensitivity for Propane(C3H8) and Butane(C4H10).

Introduction

- Gas Leakage detector is a simple system that is designed to detect and notify any leakage of natural gas or any other flammable gas.
- Although these gases do help the man, but it is also equally dangerous when not taken care of them.
- If we seek out the recent accidents that happen in house due to gas leak,we will be seeing a handful of them.
- Well Coming to the point, we have come up with the solution to at least control them.

Objectives

- LPG gas which used in many applications because of its desirable properties like homes, hostels, industries, vehicles so we can use this device to detects gas leakage.
- This system automatically alert the people by sending the message and alert the people at home by activating the LCD, BUZZER.
- It also take the necessary action of preventing the gas leakage.
- A webserver is developed for continuous monitoring of the sensor's value.

Literature Review

Paper Title : An IoT based System for Domestic Air Quality Monitoring and Cooking Gas Leak Detection for a Safer Home

Authors: Kalpesh Gupta, Gokul Krishna G and Anjali T

Publication details : International Conference on Communication and Signal Processing, July 28 - 30, 2020, India

Findings: https://ieeexplore.ieee.org/document/9182051

Advantages: Proposing a hybrid low cost low power IoT based system for air quality determination and cooking fuel leak detection, enhancing the safety of the users in the house.

Disadvantages: Person don’t get any alert message or any alarm.

Literature Review

Paper Title : Automatic Smart and Safety Monitoring System for Kitchen Using Internet of Things

Authors: Harika Pudugosula Student, Master of Technology Computer Science and Engineering Amrita School of Engineering, Bangalore Amrita Vishwa Vidyapeetham, India

Publication details : Proceedings of the International Conference on Intelligent Computing and Control Systems (ICICCS 2019) IEEE Xplore Part Number: CFP19K34-ART; ISBN: 978-1-5386-8113-8

Findings: https://ieeexplore.ieee.org/document/9065663

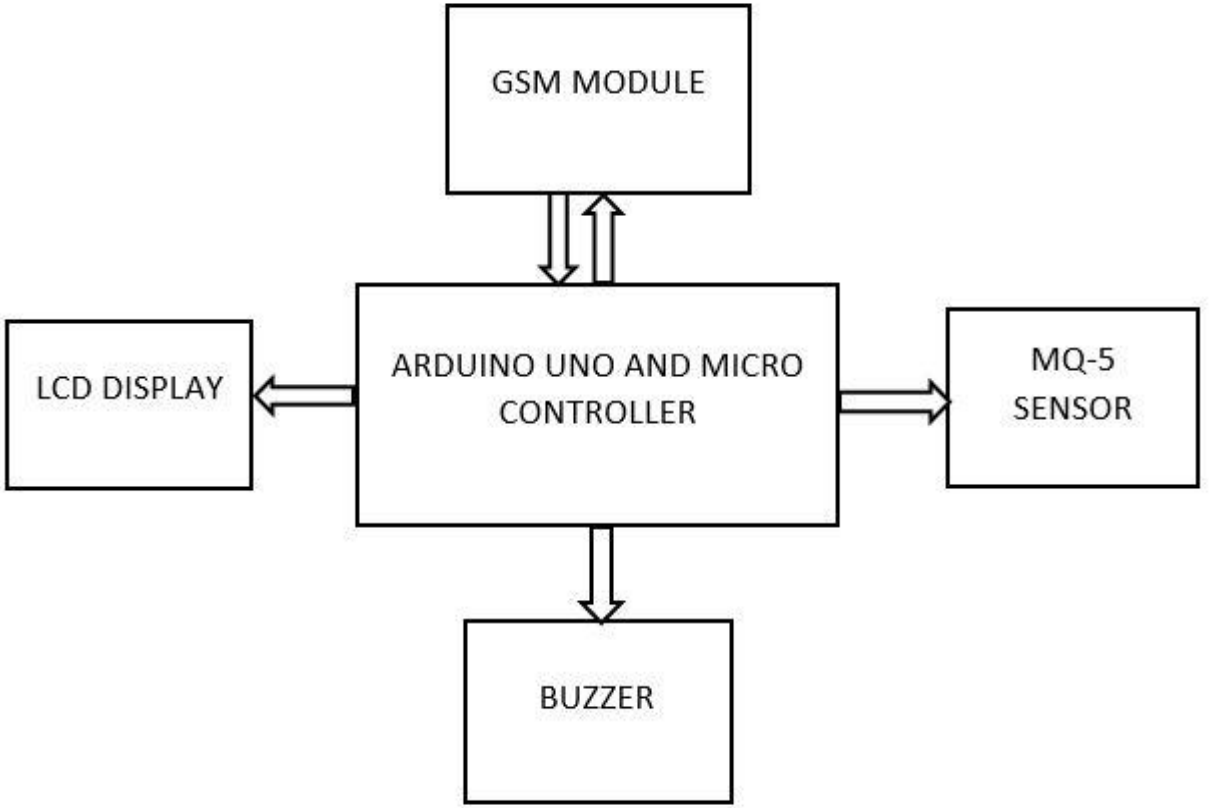
Advantages: The sensor used in this model can sense and detect the leakage of the gas, and the user gets notification regarding gas leak.

Disadvantages: To uploads the value into web server it requires the Wi-Fi module.

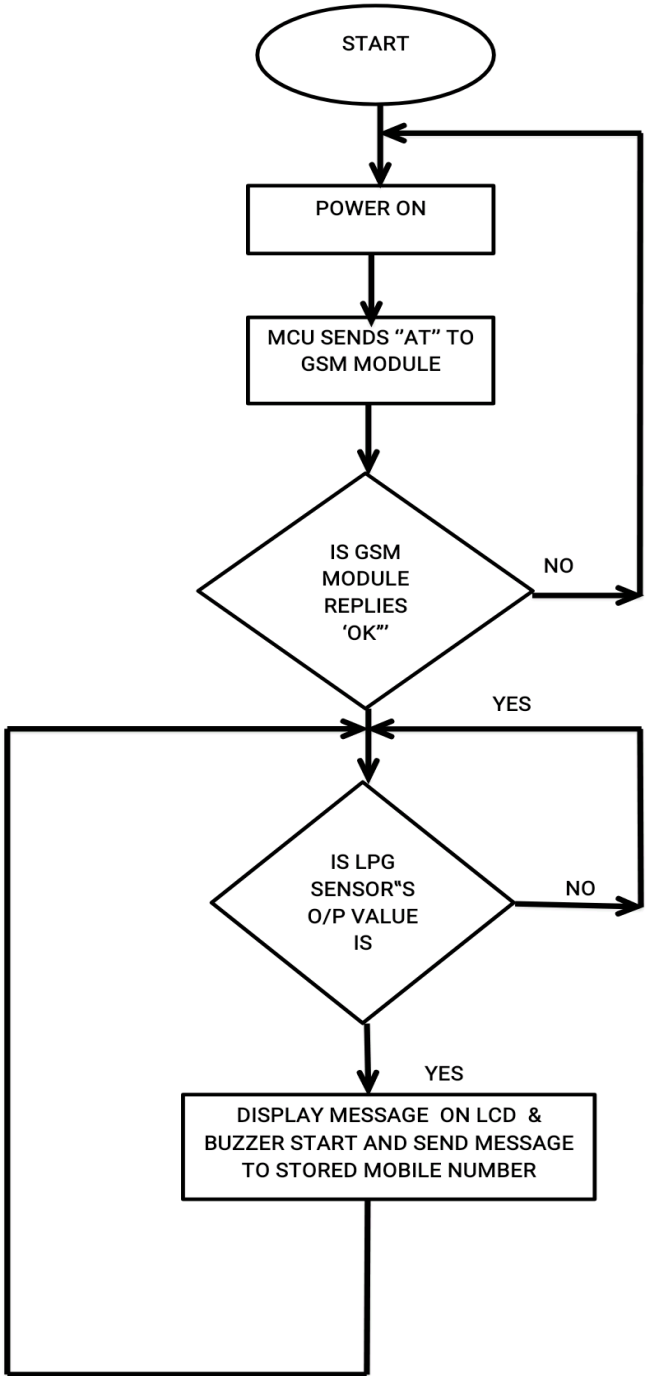
Problem Definition

- Gas leakage leads to various causality resulting into both financial loss as well as human life.
- In human's daily life, environment plays a vital role in health issues. The risk of fires, suffocation, explosion all are based on their physical properties such flammability, toxicity etc.
- The number of deaths figures due to explosion of gas cylinders has been increasing in recent years.
- The main reason for such explosion is due to sub-standard cylinders, worn out regulators, old valves and lack of awareness using gas cylinders add to risks.

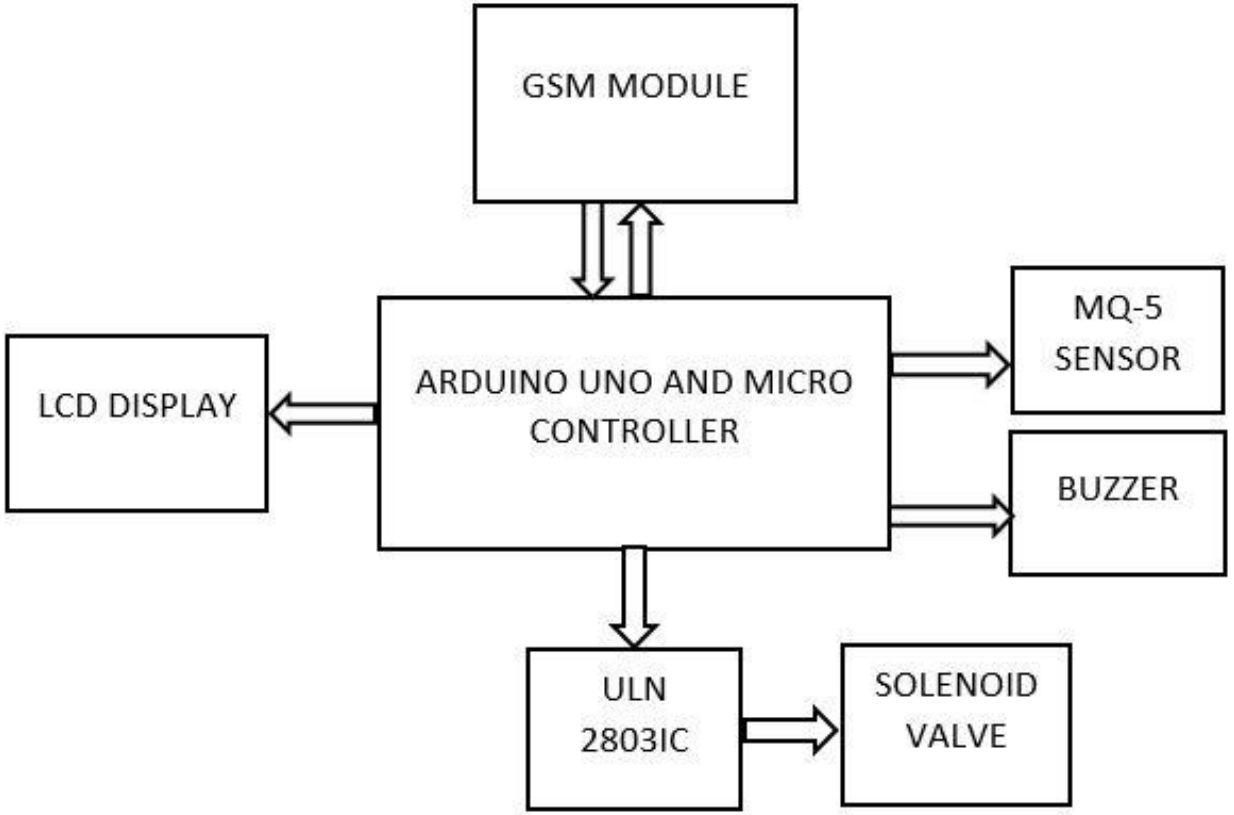
Existing System Architecture/Working

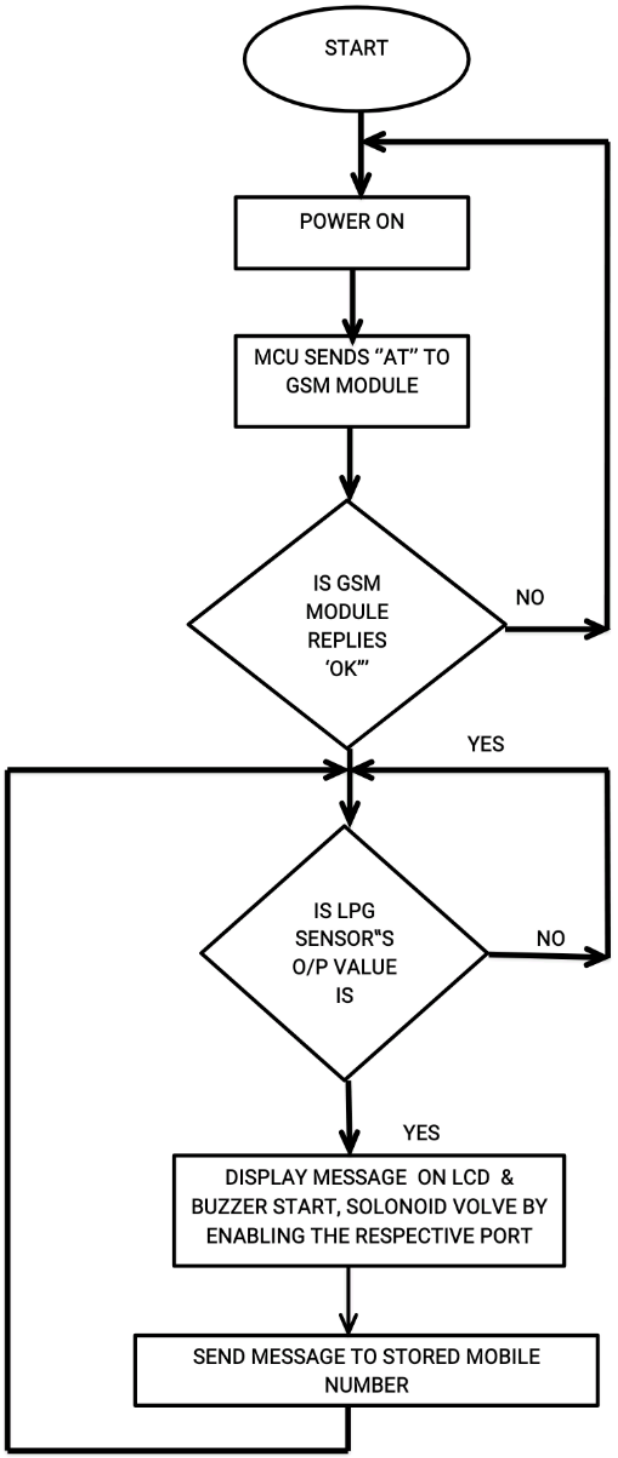


FLOWCHART:


START
POWER ON
MCU SENDS "AT" TO GSM MODULE
IS GSM MODULE REPLIES 'OK"'
NO
YES
IS LPG SENSOR"S O/P VALUE IS
NO
YES
DISPLAY MESSAGE ON LCD & BUZZER START AND SEND MESSAGE TO STORED MOBILE NUMBER

Proposed System Architecture/Working

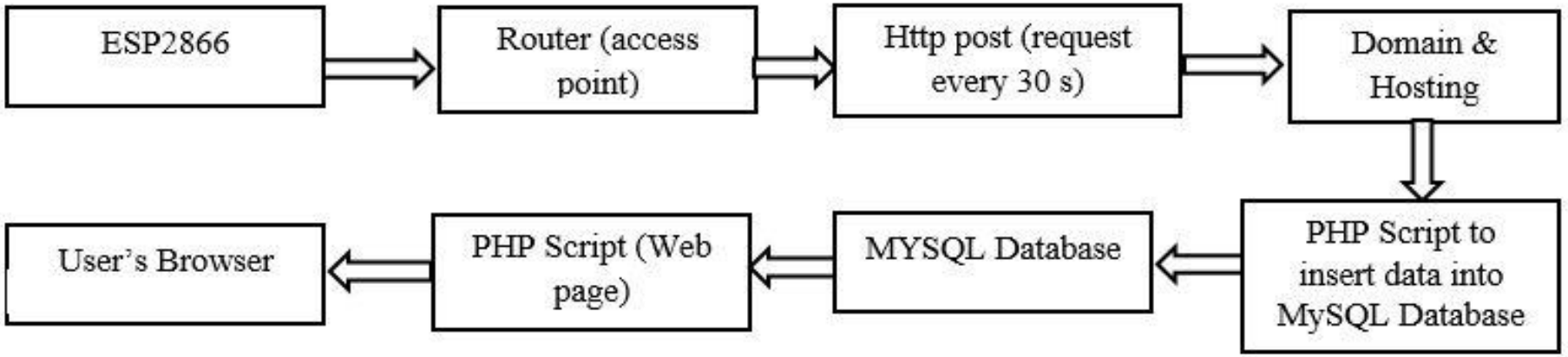



START
POWER ON
MCU SENDS "AT" TO GSM MODULE
IS GSM MODULE REPLIES 'OK'"
NO
YES
IS LPG SENSOR"S O/P VALUE IS
NO
YES
DISPLAY MESSAGE ON LCD & BUZZER START, SOLONOID VOLVE BY ENABLING THE RESPECTIVE PORT
SEND MESSAGE TO STORED MOBILE NUMBER

WebServer

- A webserver is developed for continuous monitoring of the sensor's value. ESP2866 makes an HTTP post request to a PHP script to insert sensors value into a database.
- A specific domain name and hosting space are required for reaching out to the webserver.
- A MySQL database is prepared for storing data from the sensors. A PHP script is developed for inserting the data into the MySQL database.
- The user can monitor the value of the sensor from anywhere by accessing the web address

WebServer Process Block Diagram



Scope of your project

- Our system of gas leak detector can also be upgraded. There are many relevant options that can be implemented
- The current system gives us notifications of leakage and also stop flow of gas.
- This system can be further more upgraded to a compact version where a mini- speaker can be used, less wiring and many other similar upgrades can be made.

Thank You...!!