Harzardous Area Monitoring for Industrial Plant powered by IOT

IDEATION

Introduction

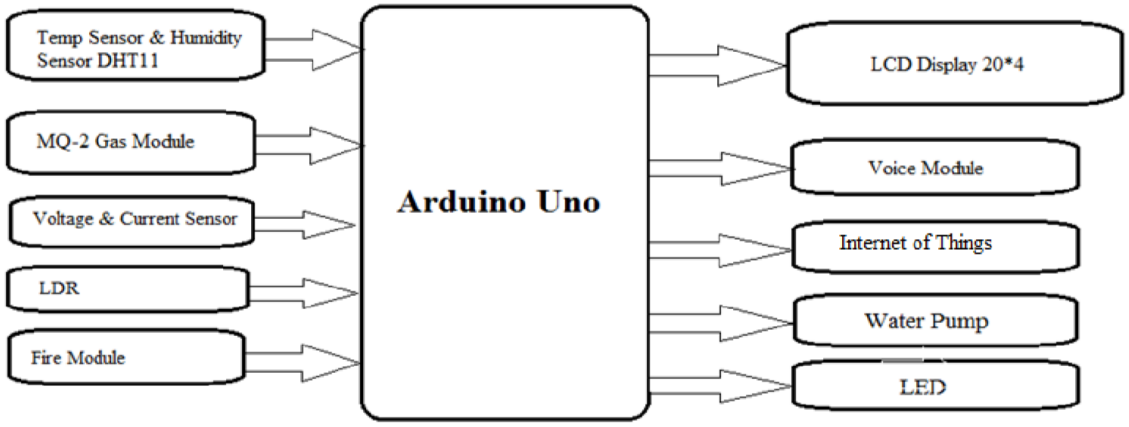
- In the list of most threatening causes that led to global warming are fire hazards.
- Hazards can be resolved by the adaption of new and growing technologies which also help in better living. Applications in monitoring and control are performed by the wireless multisensory network are characterized by small, low power and cheap devices which are integrated with limited computation, sensing, and remote communication.
- It impacts enormously on fire emergency. Temperature sensors are installed in fire endangered areas which allow a person to manually provide temperature information on fire extinguishing website email or landline number.
- The process of accessing information from the website may be time-consuming and it may cause some amount of delay in the response to the fire extinguisher. IOT is a wireless technology.
- Use of IOT is in combination with fire fighting for hazard source monitoring, fire fighting rescue, fire early warning, preventing and early disposal. It is effectively used for the enhancement of fire brigade fire fighting and emergency rescue capabilities.

Problem Statement

The objectives of the research are:

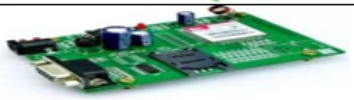
- To monitoring industrial parameter monitoring and power consumption control.
- To the Data availability and easy remote configuration.
- To the accomplishment of requirements of industrial sensors.
- To design strategies in achieving robust nodes, security in communication.
- Implementation of a real WSN is done to measure industrial parameters and to perform experimental validations.

Block Diagram



Circuit Block Diagram

Hardware Description:

No.	Devices	Picture	Main function
1	Arduino		All the sensors are interfaced through the Arduino(required)
2	Fire detector		It detects the fire and is interfaced through Arduino(required)
3	Gas Sensor		It detects the smoke and is interfaced through Arduino (required)
4	LDR		It detects if the light is present
5	Voice Module		It gives us the output of the different sensors
6	GSM		It sends the message to the user regarding fire, smoke alert.

Software Description

- Arduino UNO API
- Multisim

Advantages

This system helps in the following ways:

- To detect the exact direction of the fire source.
- The capability of sensing accurately with increased flexibility
- Reduce human effort.
- Reliable and economical.
- If any of the sensor output will be high, Voice module will produce the sound for intimating the condition to others.
- To detect fire in the disaster-prone area.

Conclusion:

- WSN is possible today due to technological advancement in various domains.
- Envisioned to be an essential part of our lives design constraints need to be satisfied for a
- realization of sensor networks.
- In this system, various sensors like fire, gas, LDR sense
- the fire and other parameters, the fire get extinguished with the help of water pump
- attached in the system.
- Similarly other actions will to be taken by the system. If the voltage and current go above the threshold value and leakage of gas are detected by gas sensors and the voice module plays an audio note which gives an alert message to the factory workers for the gas and fire detected.
- IOT and the Android app help us for remote
- monitoring. The entire mechanism is controlled by Arduino.