NEW GOVERNMENT POLYTECHNIC PATNA-13

AUTOMATIC FIRE FIGHTING ROBOT

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Outline

- Introduction
- Objectives
- Components
- Circuit Diagram
- Working Steps of Module
- Conclusion
- Application
- Advantage
- Future Scope
- Referance

Introduction:-

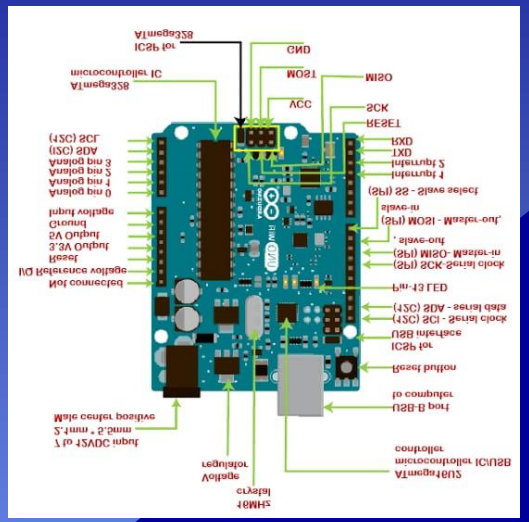
- To develop and design a Fire Fighter Robot by using Ardino Uno.
- Monitors area where natural calamities and bomb explosion happens. Sense fire , smoke and temperature at the site of disaster by using flame and smoke sensors mounted on robot.
- Design a robot that is able to avoid obstacles, detect fire next extinguish fire. If fire is detected, MCU operates water pump mechanism. Provide audio and visual indications. Extinguishes fire on detection.

Objective

- Design and development of low cost firefighting robot.
- Run automatically firefighting robot.
- Extinguish fire on detection.
- Reduces the efforts of human labour and level of destruction.

Components:

- Ardino Uno



- L293D Moter Driver

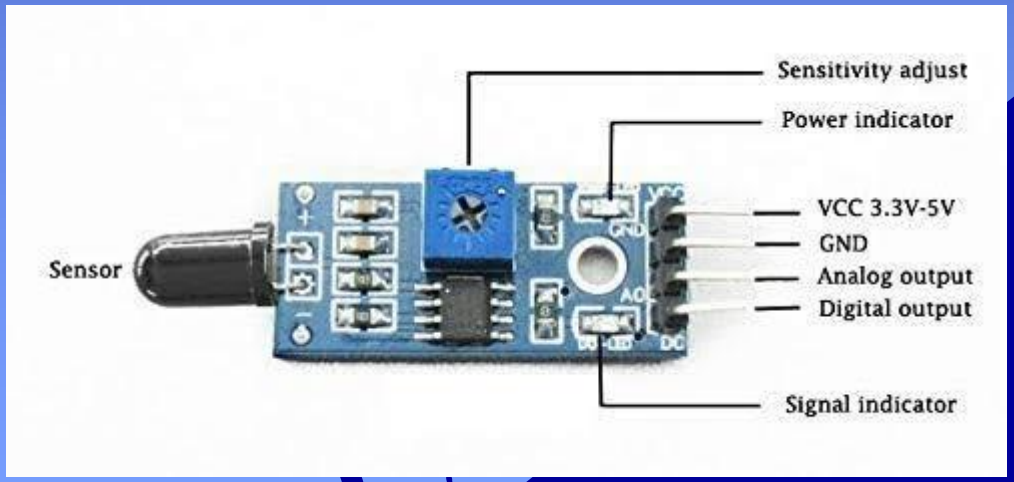
Components:

- T-T Gear Moter

- Servo Moter

Components:

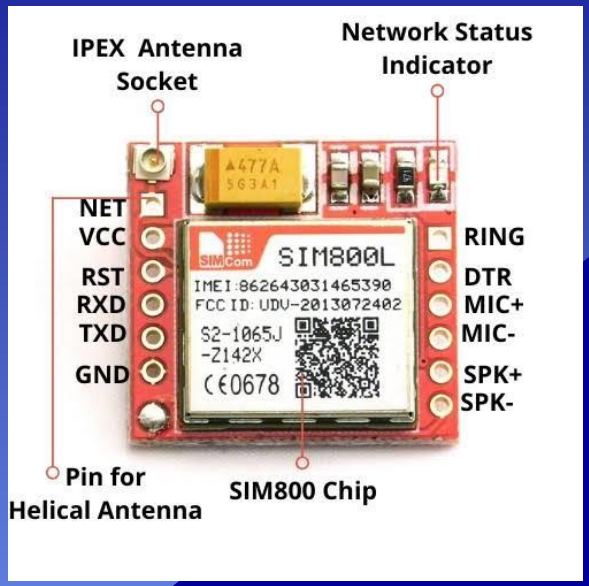
- Water Pump

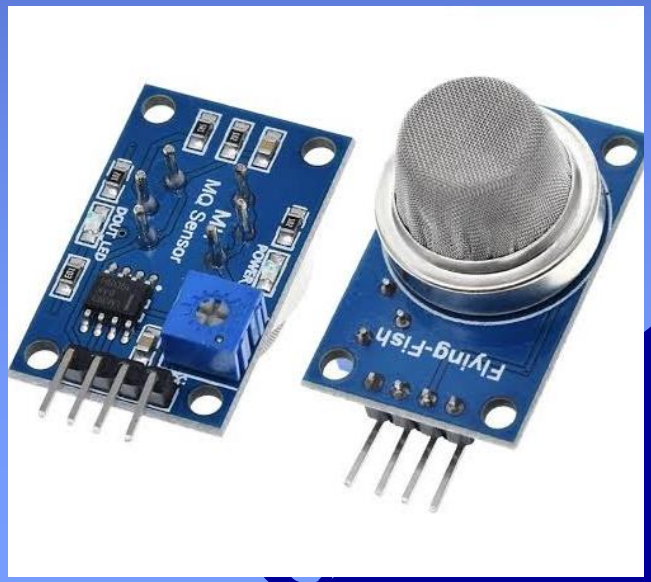


- Flame Sensor

Components:

- Sim 800L

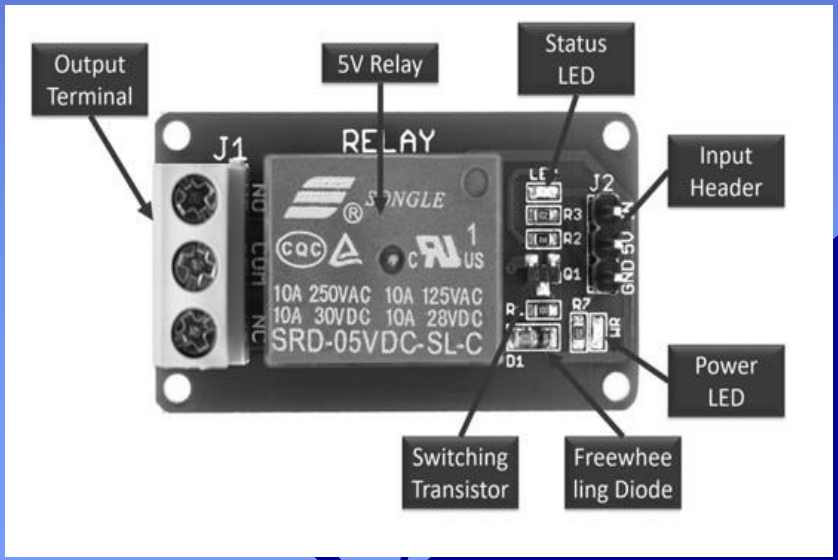




- MQ2 Sensor

Components:

- Buck Converter



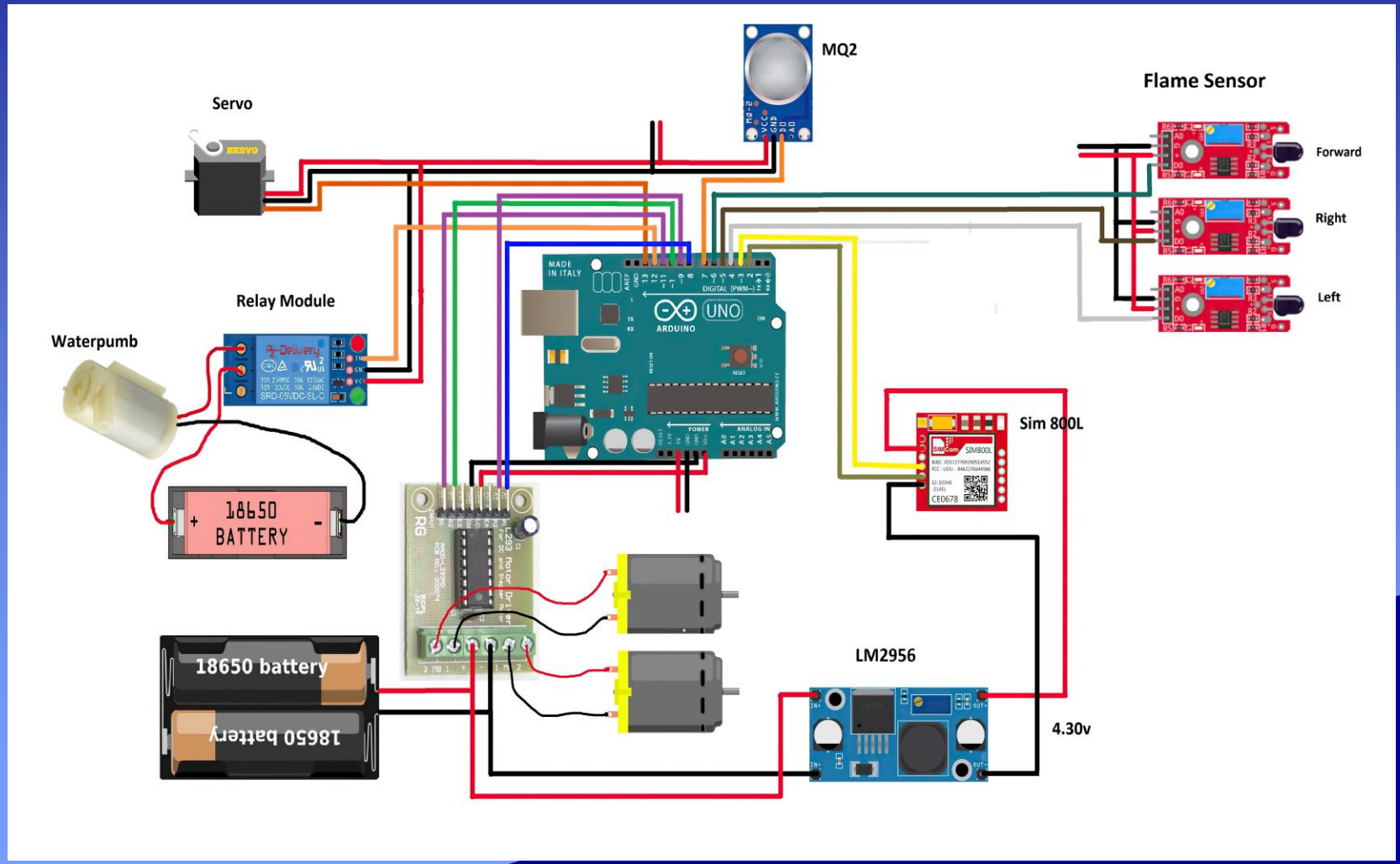
- Relay Module

Flame Sensor :-

- Three flame sensors from the array are used to detect fire from front, left and right.

- To be accurate we read three values for each one and evaluate the average and we must wait few milliseconds before start reading new values from the sensors.

The module circuit:

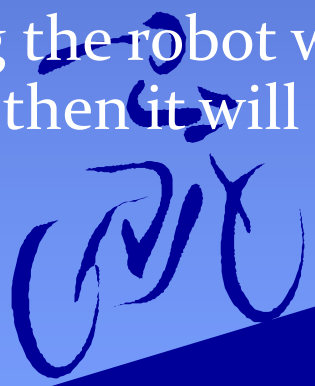


Working steps of module :-

- Flame tracking step.
- Movement step
- Extinguishing Fire step.

Extinguishing Fire step

- The robot track the flame.
- When the fire is near stop and turn on the pump.
- While the water pump is running the robot will keep sensing the fire if no flame (fire) then it will turn off water pump.



Conclusion

- In this project we aim to reduce the effect of fires accidents which usually start from small flame, therefore people life and money would be saved.
- This robot is helpful in natural calamity and bomb explosions where occurred.

Application :-

- It can be use to fight fire in hazardous location, where firefighter can not go easily and safely.
- It is use for domestic as well as commercial purpose.
- To save people who get trapped in the fire.
- Forest fire detection.

Advantage:-

- To detect the exact direction of the fire source.
- Capability of sensing accurately with increased flexibility.
- Reduce human effort.
- Reliable and economical.
- Not sensitive to weather conditions.
- Low cost in the long run.

Future Scope:-

- The potential of fire fighting Robot acts during extinguish flame , including:-
  - Detection fire
  - Extinguish fire
- Implementation of automatic fire detection.
- It can also operate using the solor system.
- Design a fire fighter robot using numerical approach.

References

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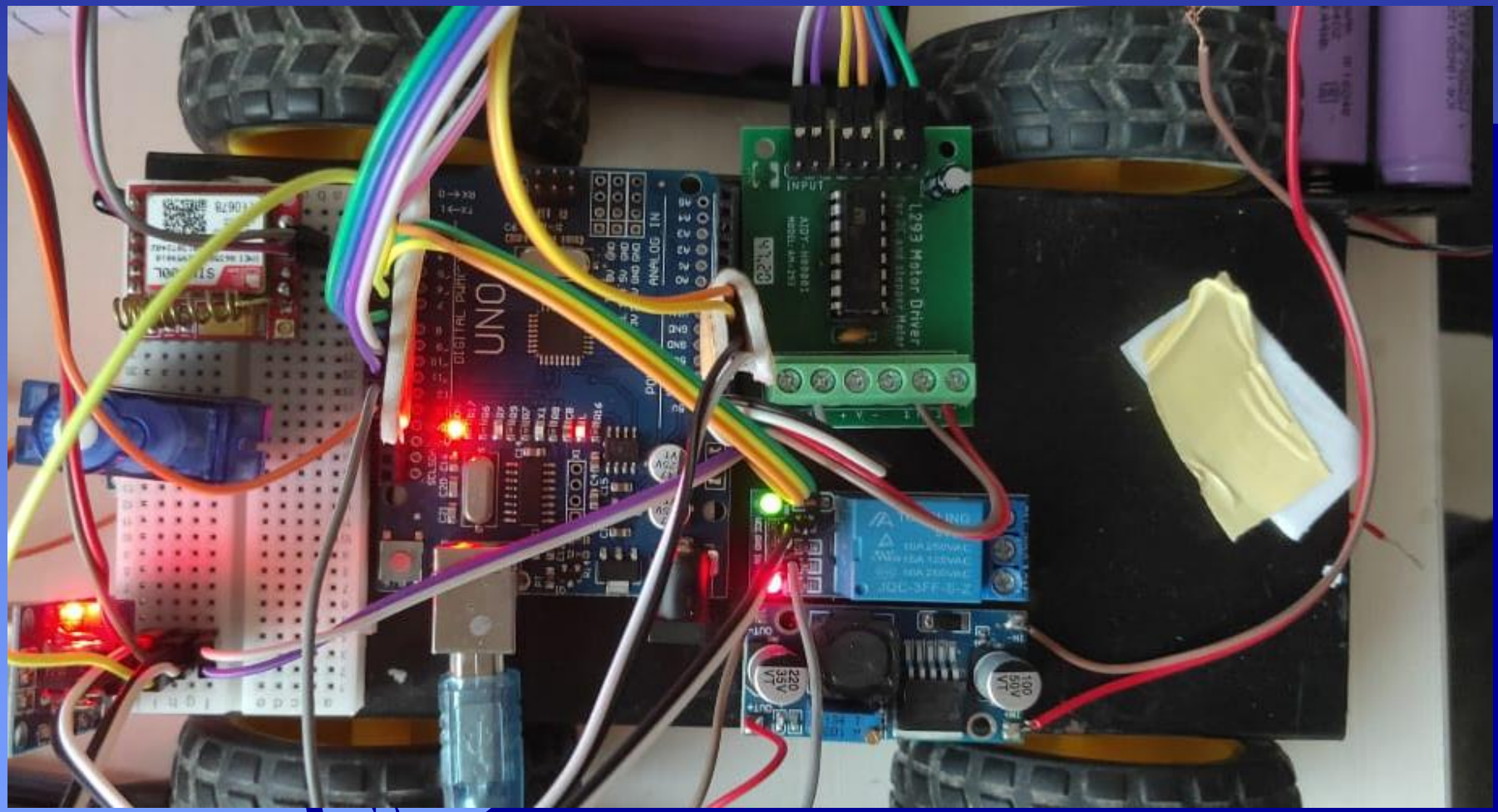
- GP2Y0A21YK-DATA-SHEET.pdf
- http://es.aliexpress.com/item/The-new-flame-sensor-module-6-road-detection-analog-to-digital-dual-output-fire-robot-updated/764636161.html

Module of the project



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