

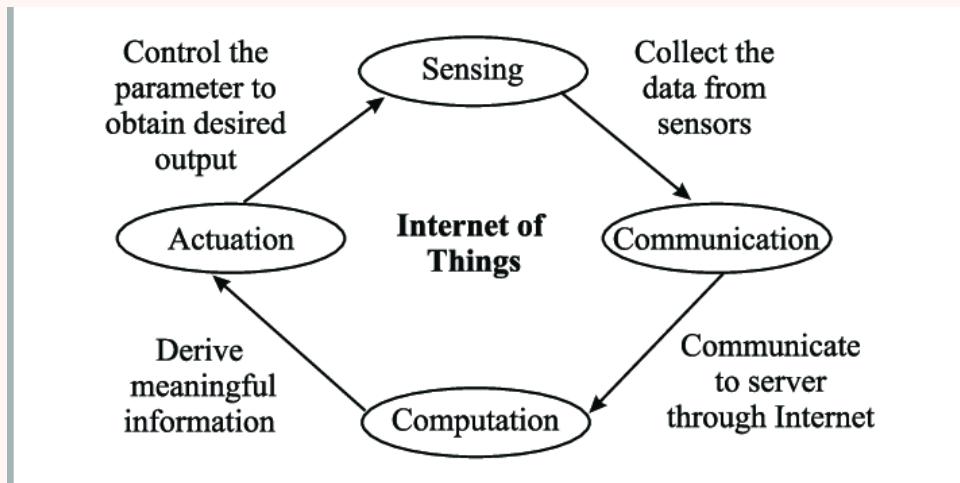
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**NAME: R.J.ELMUKI  
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BRANCH: B. TECH CSE  
CLASS: III YR “A” SEC  
TOPIC: DIFFERENT TYPES  
OF SENSORS**

# **WHAT IS SENSOR?**

A sensor is a device that measure, detects and responds to some type of input from the physical environment. That input could be heat, light, motion, pressure, moisture or any one of a great number of other environmental phenomena. The output is generally a signal that is converted to human-readable display at the sensor location or transmitted electronically over a network for reading or further processing.

# WORKING PRINCIPLE OF IOT



# **Different kind of sensors in IoT**

1. Water Quality Sensor
2. Chemical/Smoke & Gas Sensor
3. Level Sensor
4. IR Sensor
5. Ultrasonic Sensor

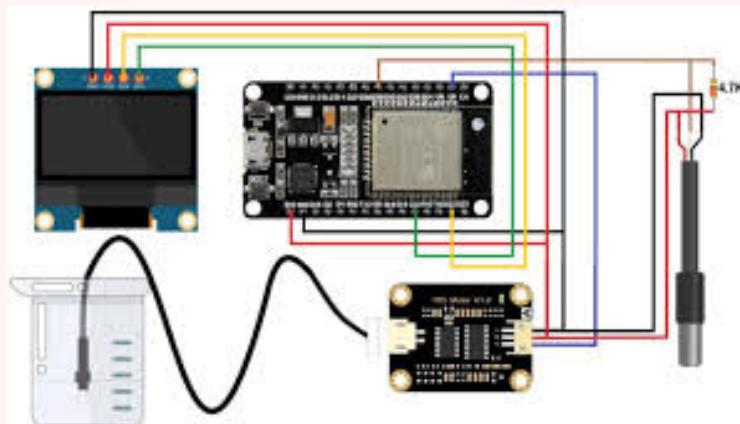
# **Water Quality Sensor**

Water quality sensor are mainly used to measure a dozen of the most relevant water quality parameters, Wasp-mote Smart Water is the first water quality-sensing platform to feature autonomous nodes that connect to the Cloud for real-time water control. It's used to measure quality of sea water, river water and etc.

# APPLICATIONS

## 1. Water Quality Sensor

- - Environmental Monitoring: Used to monitor the quality of water bodies like rivers, lakes, and oceans to detect pollutants and assess ecosystem health.
- - Wastewater Treatment: Helps in assessing the quality of wastewater before and after treatment processes.
- - Aquaculture: Monitors water parameters in fish farms to ensure optimal conditions for fish health.
- - Drinking Water Safety: Used in municipal water systems to continually assess the safety and quality of drinking water.
- - Industrial Processes: Monitors water quality in various industrial applications to ensure compliance with regulations.



# Water Quality Sensor

# **CHEMICAL/SMOKE AND GAS SENSOR**

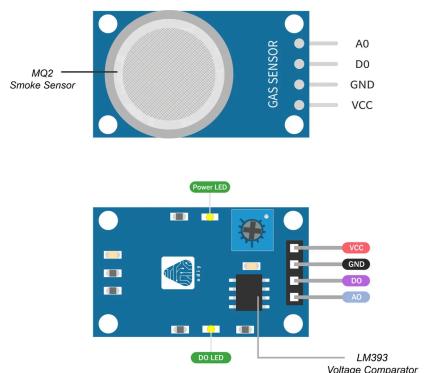
smoke and gas detector is a gadget that sense gas, smoke and typically it's an indicator of fire. Now a days all security devices using this sensor to passing signal to fire alarm to control panel. Household smoke detector is also known as smoke alarm, most of the device manufacturer using audible or visual alarm system in security devices that detect automatically.

# APPLICATIONS

## 2. Chemical/Smoke & Gas Sensor

- **Industrial Safety:** Detects harmful gases (e.g., CO, CH<sub>4</sub>, H<sub>2</sub>S) in factories and chemical plants to prevent accidents and ensure worker safety.
- **Home Safety:** Smoke detectors used in residential settings to alert occupants of fire hazards.
- **Environmental Monitoring:** Monitors air quality in urban areas to detect pollutants and provide data for regulatory compliance.
- **Automotive Applications:** Used in vehicles to monitor exhaust emissions and ensure compliance with environmental standards.
- **Laboratories:** Monitors chemical exposure levels in research and industrial labs to protect personnel.

**ADIY MQ2 Smoke Sensor Module**



- 1 = Output**
- 2 = Vcc (positive voltage)**
- 3 = Gnd**

# Chemical/Smoke and Gas Sensor

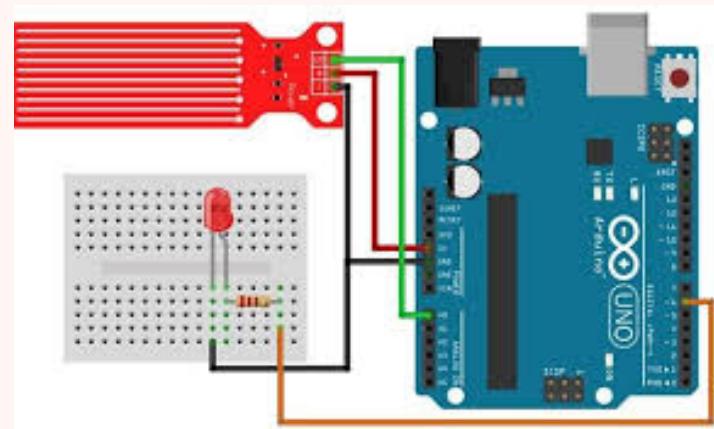
# **LEVEL SENSOR**

It's used to detect the level of liquids and other fluids and fluidized solids, including granular materials, slurries and powders that exhibit an upper free surface. Level sensors is also using for water waste management and recycling purpose, like it's using to measure water tank levels, petrol fuel gauging, high or low level alarm, liquid assets inventory and irrigation control.

# **APPLICATIONS**

## **3. Level Sensor**

- Liquid Level Monitoring: Used in tanks and reservoirs to monitor the level of liquids for inventory management and safety.
- Wastewater Management: Monitors levels in treatment tanks to ensure proper operation of wastewater treatment plants.
- Food and Beverage Industry: Ensures proper levels of ingredients in production processes.
- Oil and Gas: Monitors levels in storage tanks to prevent overflows and spills.
- Water Supply Systems: Helps manage water levels in wells and aquifers.



# Level Sensor

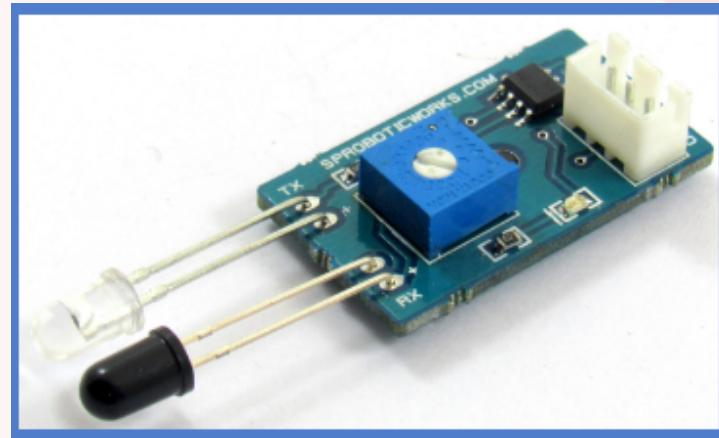
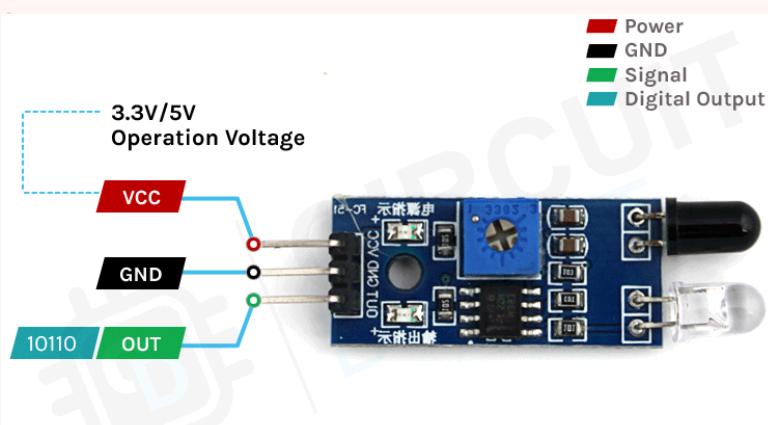
# **IR Sensor**

This smart gadget is used to detect the infrared lights. Infrared sensor visualize the heat leaks in houses, identify environmental chemicals in the environment, and helping doctor to measure patient blood flow. It can be integrated with wearable electronics. A very simple example, all the remotes having IR sensor, it's using to pass the command to respective devices, like TV remote, fan remote, vehicle key remote all having infrared sensor.

# **APPLICATIONS**

## **IR Sensor (Infrared Sensor)**

- Motion Detection: Commonly used in security systems to detect movement in a specified area.
- Temperature Measurement: Used in non-contact thermometers to measure the temperature of objects without direct contact.
- Remote Controls: Utilized in home appliances, televisions, and other devices for remote operation.
- Industrial Automation: Used in manufacturing processes for detecting the presence of objects and monitoring



# IR Sensor

# **Ultrasonic Sensor**

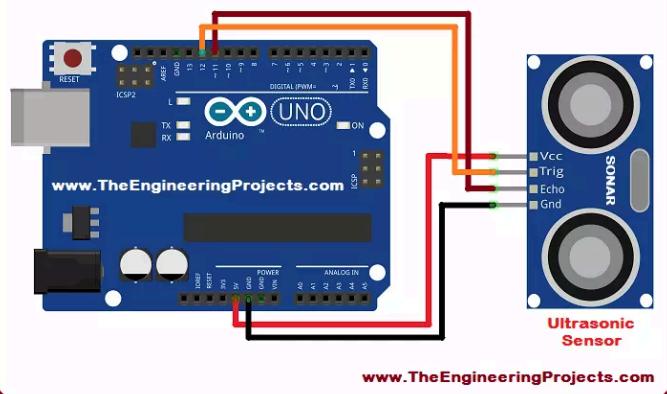
An Ultrasonic sensor is used to measure the distance between the two object by using sound waves. It's measure distance by sending sound wave at a specific frequency and listen that sound wave house to measure distance. There are two kind of an ultrasonic sensor is, "active ultrasonic sensor" and "passive ultrasonic sensors". An active ultrasonic sensors generates the high frequency sound wave to receive back the ultrasonic sensor for evaluating the echo. But, passive ultrasonic sensors are just used for detecting ultrasonic noise which is present under specific conditions.

# APPLICATIONS

## 5. Ultrasonic Sensor

- Distance Measurement: Commonly used in robotics and automation for obstacle detection and distance measurement.
- Liquid Level Measurement: Used in tanks to monitor the level of liquids without contact.
- Automotive Parking Assistance: Helps drivers by detecting obstacles while parking and providing distance information.
- Industrial Automation: Used for material handling and inventory management by detecting the presence and level of items.

### Ultrasonic Sensor Arduino Interfacing



# ULTRASONIC SENSOR

THANK YOU