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Iot for Monitoring Water Bodies

Arising-hackers
KCG College of Technology

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HACKFEST·22

Arising-Hackers

- **Shaik Althaf**
  - BE,1
  - Electrical and electronics engineering
  - I have a **creative** and **logical mindset** to analyse the real-world problems,so that i have participated in many **projects as well as hackathons** including **australian hackathon.**

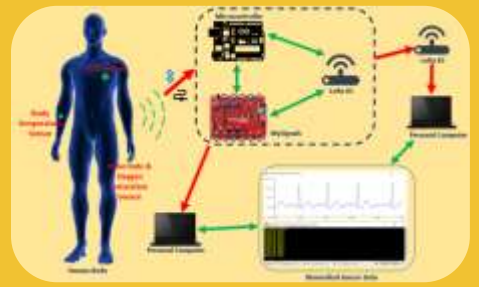
- **V Sriram**
  - BE,1
  - Computer science and technology
  - I have got selected in an **australian hackathon**, and participated in many , i am talented in **Elocution** and **hosting**.

- **B Nafisa**
  - BE,1
  - Aerospace
  - This is the first hackathon project I am undertaking and I am very much interested **to explore** and **learn things**.

Iot for monitoring Water Bodies

Water is recognized as a universal solvent. This characteristic of water makes it so **important for life** on Earth to flourish. The covalent bonds of atoms of water give water **its solubilizing properties**.

Our project monitors and gives solutions for mentioned challenges 1,2 , 3, 4 and 5:

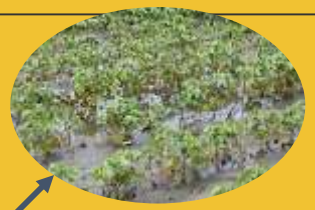


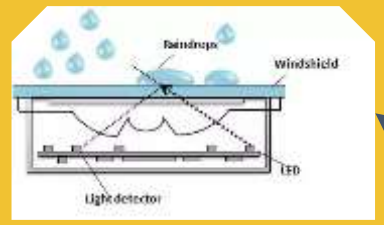
The evolution of humans has resulted in various technological development as well as a gave way to various problems

Our project continuously monitors various parameters and alerts the control panel to promote an effective action to be performed

our prototype has an effective working and it gives solutions for all the challenges

Challenge 1



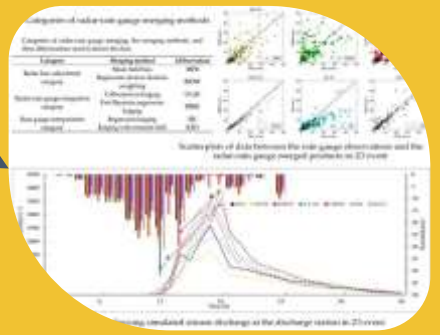


ANN (Artificial Neural Network): It is a massive parallel distributed processor that has natural propensity for storing exponential knowledge and making it available use

Heavy rainfall can lead to numerous hazards result in disruption of transport ,communications, and cause damages buildings,feildes and infrastructure..

Rain sensors are mostly employed with hygroscopic disks that swell in the presence of rain and shrink back down again as they dry out

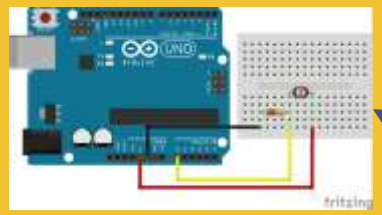
The first layer would involve manipulations using ANN with appropriate weights and the second layer would use Bayesian statistics which would ultimately give the output .



It helps in saving money by switching off the irrigation by system when it rains ,

this saves money by cutting off bills on electricity consumption

Challenge 2

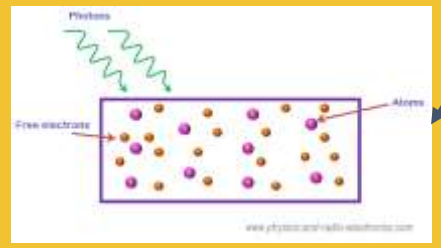


Power has become a part of modern life and one cannot think of a world without it. India faces a terrible power reliability situation. Today energy theft is a worldwide problem that contributes heavily to revenue losses.To overcome this our prototype consists of a photoresistor and ultrasonic sensor.

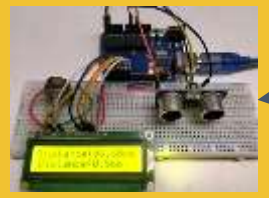
Photoresistor

A photocell or photoresistor is a sensor that changes its resistance when light shines on it. The resistance generated varies depending on the light striking at his surface.

works on photoconductivity principle. When incident light on a photoresistor exceeds a certain frequency, it conducts electricity, thereby lowering resistance. Photoresistors can be placed in streetlights and by saving the energy for the production of light during the hours of darkness.



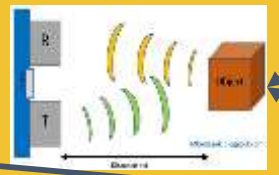
Photoresistors are most often used as light sensors. They are often utilized when it is required to detect the presence and absence of light or measure the light intensity. Examples are night lights and photography light meters.



Ultrasonic sensors

work by sending out a sound wave at a frequency above the range of human hearing. The transducer of the sensor acts as a microphone to receive and send the ultrasonic sound

The emitter and the receiver are in two separate housings. The continuous signal by the emitter is picked up by the receiver. An object interrupting the sonic beam will make the receiver react by giving an output signal



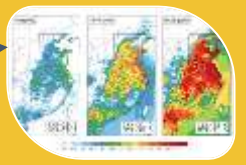
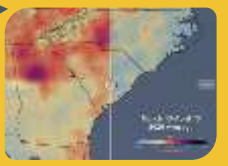
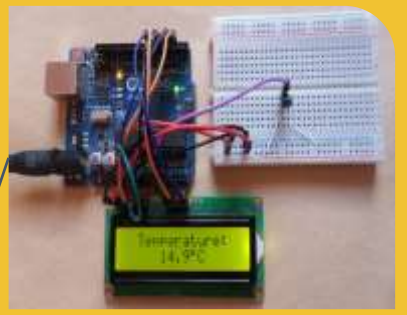
For presence detection, ultrasonic sensors detect objects regardless of the color, surface, or material (unless the material is very soft like wool, as it would absorb sound.)

When Photoresistor supplies electricity whenever needed by storing it, when any movement is detected by the ultrasonic sensor up to a specific range it alerts the server. This gives a solution for theft control and power generation.

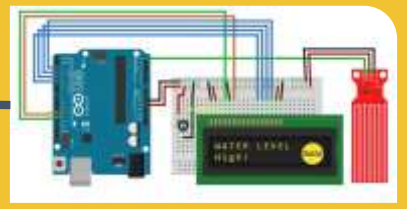
Challenge 3



Decrease in humidity in air results in an increase in temperature. And as a result water level increases

Water Level sensor



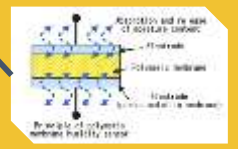
simple mechanism to detect and indicate the water level in an overhead tank or any other container

The probes send information back to the control panel to trigger an alarm

Humidity sensor

water vapor is absorbed by the substrate, ions have released from the substrate which increases the conductivity between the electrodes.

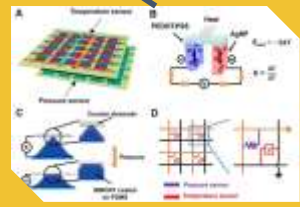
The change in resistance between the two electrodes is proportional to the relative humidity.



Temperature sensor

The main working principle is as the temperature changes its resistance also changes,

sends the alert signal when the temperature is above or below the regular mentioned parameter



This is how these sensors work. With the help of these sensors, we will be able to predict the upcoming problem by continuously monitoring it.

Challenge 4

Speech recognition module :

The acoustic waveform is converted to analog electrical signals by microphone and these are digitised and decoded. It uses pattern recognition approach, Artificial intelligence etc.

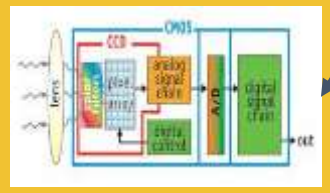
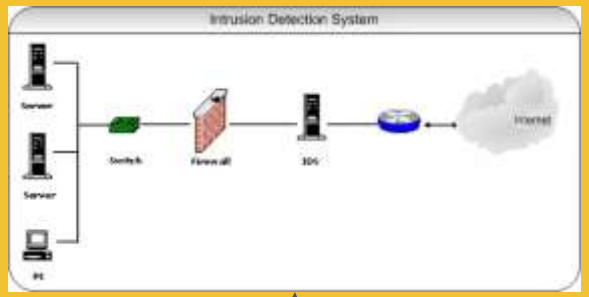


Image sensor:

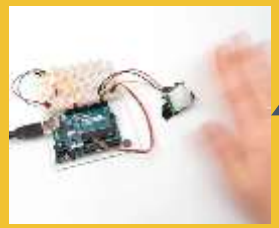
It makes an image by converting the light waves as they pass through or reflect from an object into a signal.



Nowadays intrusion detection became an important problem in the security of network and computer forensics. To ensure that the communication of information is safe, many intrusion detection systems are developed with several limitations. But the following prototype is versatile in video detection and classification of the sound produced by human, animal or bird.

PIR SENSOR:

All objects above the absolute temperature will emit heat energy at infrared wavelengths which are detected by the sensor and hence the movement is detected.



Therefore by using artificial intelligence the video is detected and the sound of humans, animals and birds is classified.

Challenge 5

- Monitoring water parameters are very important as water is required continuously for various purposes.
- Our prototype consists of a TDS sensor, water level sensor, and temperature sensor for monitoring water.
- But monitoring fails if there is a disturbance like plastics or any waste materials found on the surface of the water.

- As intrusion detection became an important problem in the security of network and computer forensics. The prototype consists of video detection and classification of the sound produced by a human, animal or bird.
- But whenever a group of people, animals or birds is present near the sensor, the sensor is unable to detect it.
- The prototype is built using artificial intelligence to detect the waste materials present on the surface of the water and detects the presence of a group of people, animals or birds present near the sensor and give information to the server.

Till now, there is no such a device will monitor all the problems. But, we are engineers looking forward to create a separate prototype solve and monitor all the challenges. And it also monitors the problems by creating an skillful IOT for rectifying them.

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