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RESEARCH ARTICLE OPEN ACCESS

SMART WEATHER PREDICTION FOR IRIGATION CONTROL WITH ANIMAL REPELLANT USING AI.

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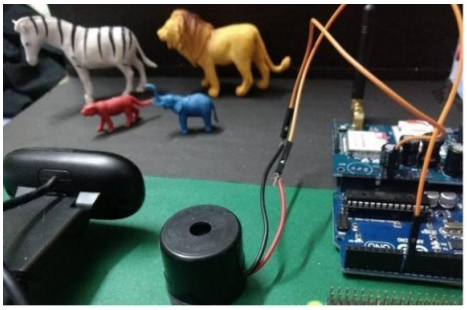
ABSTRACT:

In this project, it is a real time monitoring system. Our project provides an open source technology based smart system to irrigation requirements of a field using the sensing of a ground parameters like a soil moisture and humidity sensor. In this project a wireless sensor based on networking system is proposed to address water pumping system. This project detects the presence of any living animals. This data may either be received in the form of message through the GSM module. To combat the ruckus caused by animals, detection of their presence along with a buzzer security system has been provided in the proposed system. If the water level in the field is greater than the required level, the surplus water is removed by a water pump and can stored if possible. There is no need for human intervention in the removal process because everything is done automatically. Arduino NANO will collect and data received from the sensor.

on detecting wild animals along forms-border and also saving water by switching on and off the motor based on soil moisture contents. some speakers deliver some scary sounds so animals can be afraid to get into the field, and microcontrollers sensor data. The microcontroller analysis the data and, based on that data, sends the signals to the speakers that it generates the sound to stop the animals from reaching the field and also sends the safety instruction to the mobile of the formers. This will also send signals to turn on and off the motor based on the soil moisture content through soil moisture sensor information. Soil moisture sensors to detect moisture content in the form.

Keywords:

Buzzer, LCD, LED ,Arduino, humididty , temperature.



INTRODUCTION:

India is a nation depended upon agriculture. Improving the efficiency and quality of agriculture Based goods therefore is very critical. the design the proposed is an automatic system which assists the former in the irrigation process. It keeps alertingthe former via an on-board LCD display and messages send to the mobile of formers. This projects focuses

EXISTING SYSTEM:

The methods ,that are currently being used are senses the animal and produces the higelectricity are harmed severely and it affects.Not just wild animals but also domestic animals even human being .The system needs the human interference to remove excess water and irrigation. A sensor array is cluster of sensors such as temperature sensor - humidity sensor and soil moisture sensor.

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PROPOSED SYSTEM:

- The hardware connection of automated Agriculture fields excess water management System has the LCD display, Humidity Sensor, Soil moisture sensor, and Water pump are connected with Arduino NANO.
- When the power supply is given , the hardware starts to work. First the soil moisture sensor will measure the water level in field.
- Then the water level is displayed with the details in LCD display.
- when the water level of field falls below the required level the field is automatically irrigated.
- If the water level in the field is greater than the required level, the surplus water is removed by a water pump and can stored if possible .
- There is no need for human intervention in the removal process because everything is done automatically.
- procedure for animal detection is given below:
- 7.The image is fetched using the monitoring panel.
- 8. The fetched image is processed using python coding.
- 9.The fetched image is checked for various features of objects.
- 10.Then it detects and classifies the animal which has been captured by the monitoring panel.
- 11.Algorithm calculates the accuracy in percentage based on number of matched objects.
- 12.If the accuracy of detected animal is above 45% the alert signal will be sent to the registered user through the SMS service provider.

METHODOLOGY

Our project is separated into two segments

1.Animal repellant

2. Irrigation system

Fig 1: block diagram of animal detection .

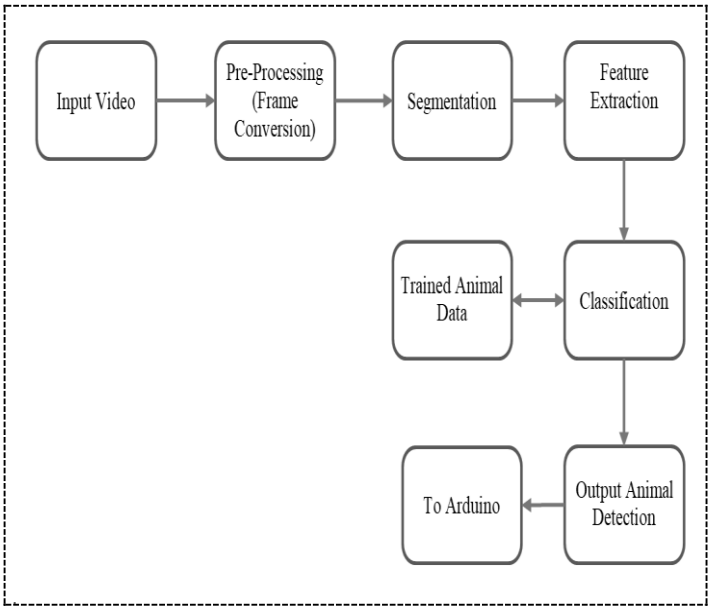
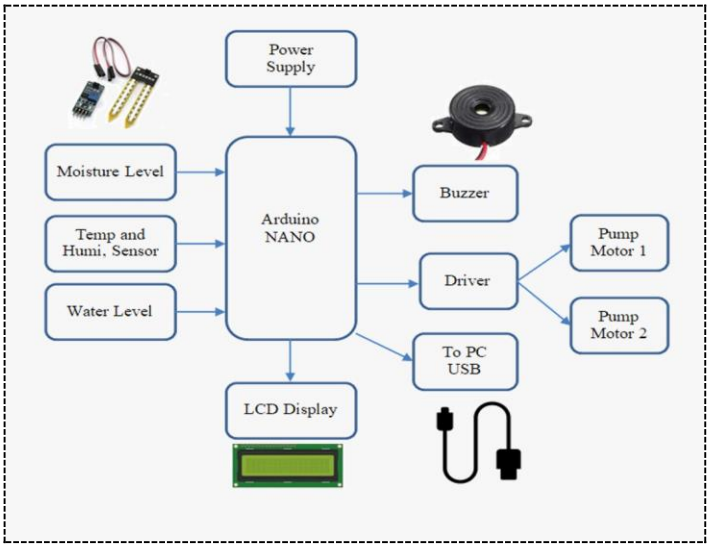


Fig 2: block diagram of irrigation system



COMPONENTS USED:

Hardware Requirements:

- **DHT11 – Humidity Sensor,**
- **Soil moisture sensor,**
- **Buzzer,**
- **LCD,**
- **Power Supply,**
- **CCTV (Closed Circuit Television),**
- **Micro controller –Arduino NANO,**
- **Pump motor-Excess water removal.**

Software Requirements:
(for hardware implementation)

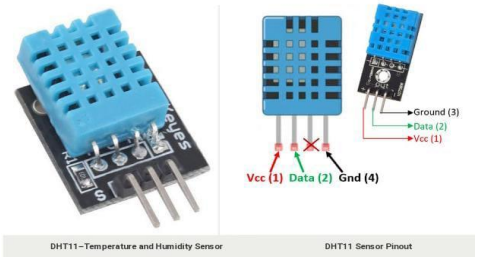
- **Arduino NANO(Embedded c program),**
- **Proteus ISIS professional (Using schematic design).**

POWER SUPPLY:

The power supply module was required to supply regulated 5V dc to the circuit while plugged to the mains. The components include Step down transformer, Voltage regulator, Capacitors and Diodes.

HUMIDITY SENSOR:

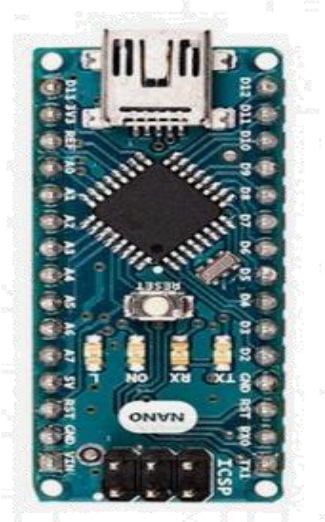
- Humidity sensors work **by detecting changes that alter electrical currents or temperature in the air**. There are three basic types of humidity sensors: capacitive, resistive and thermal. All three types will monitor minute changes in the atmosphere in order to calculate the humidity in the air.



ARDUINO NANO:

Arduino is an open source platform for prototyping based on user-friendly software. It provides a flexible base for engineers to experiment on designing interactive environments. Its main components are

- 14 digital input/output pins
- 6 analog inputs
- 16 MHz crystal oscillator
- USB connection
- reset button

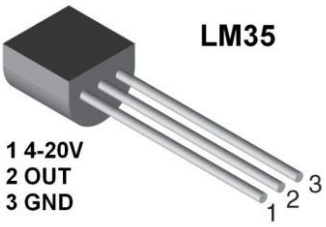


TEMPERATURE SENSOR:

Temperature sensor basically measures the heat/cold generated by an object to which it is connected. It then provides a proportional resistance, current or voltage output which is then measured or processed as per our application.

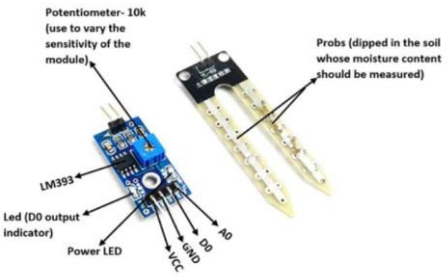
Features,

Calibrated Directly in Celsius (Centigrade)
Rated for Full −55°C to 150°C Range
Suitable for Remote Applications
Low-Cost Due to Wafer-Level Trimming
Operates from 4 V to 30 V



SOIL MOISTURE SENSOR:

Soil moisture sensors **measure the water content in the soil and can be used to estimate the amount of stored water in the soil horizon**. Soil moisture sensors do not measure water in the soil directly. Instead, they measure changes in some other soil property that is related to water content in a predictable way.



AIR QUALITY SENSOR:

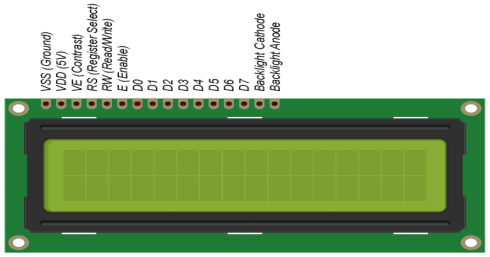
Air quality sensor for detecting a wide range of gases, including NH3, NOx, alcohol, benzene, smoke and CO2.

Ideal for use in office, hospital, home and factory. MQ135 gas sensor has high sensitivity to Ammonia, Sulfide and Benze steam, also sensitive to smoke and other harmful gases. It is with low cost and particularly suitable for Air quality monitoring application.

LCD DISPLAY:

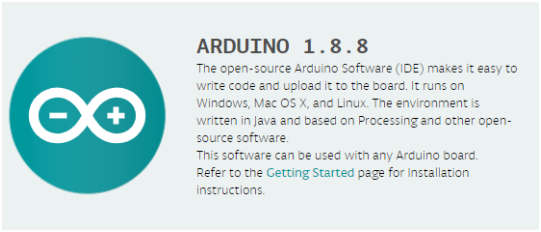
This is a white on green display having 16 characters and 2 rows with high brightness backlight. 16 x 2 LCD is ready to use with micro-controllers as a digital input. LCD used to display the prototype sensors data display, and any data that

requires a simple display.



ARDUINO IDE:

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Geniuno hardware to upload programs and communicate with them.



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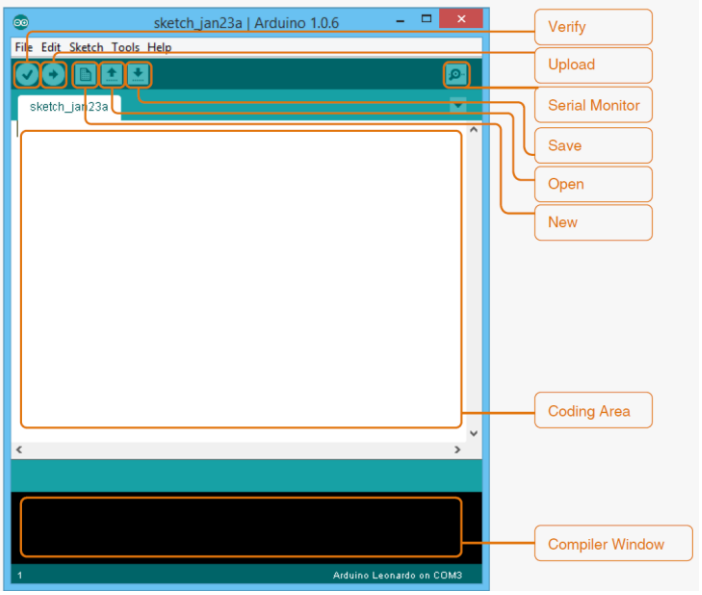
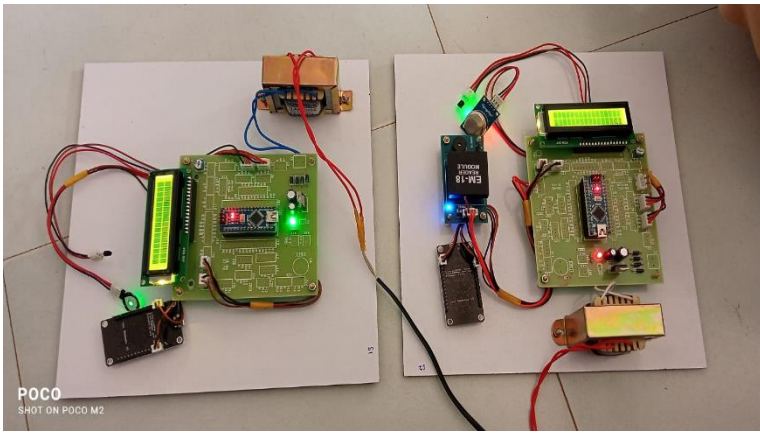


RESULTS AND DISCUSSION

HARDWARE KIT:



CONCLUSION

- Effective, accurate and adaptive .
- Requires no human supervision .
- Real time monitoring .
- Causes no harm to animals and humans.
- Safeguards cultivated crops without manual observations.
- To prevent the loss of crops .
- To protect the area from animals which pose a major threat to the agricultural areas .
- .

FUTURE SCOPE:

- ✓ The proposed system is only limited for a village surrounded area that is near to the forest area.
- ✓ In future can enhance the to a wide range area also with additional effective sensors .
- ✓ AI systems are helping to improve the overall harvest quality and accuracy – known as precision agriculture .
- ✓ AI technology helps in detecting disease in plants, pests and poor nutrition of farms.
- ✓ AI sensors can detect and target weeds and then decide which herbicide to apply within the region.

REFERENCES:

[1] M . K . Gayatri , J . Jayasakthi , Dr. G.S. Anandha Mala, (2015). "Providing Smart Agricultural Solutions to Farmers for better yielding using IoT" . IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development (TIAR 2015) .

[2] Nikesh Gondchawar, Dr. R.Complexion.Kawitkar, "IoT based agriculture", all-embracing almanac consisting of contemporary analysis smart minicomputer additionally conversation planning (ijarcce), vol.5, affair 6, June 2016. Overall Journal on Recent and Innovation Trends in Computing and Communication
ISSN: 2321- 8169 Volume: 5 Issue: 2 177 – 181

[3] Dr. N. Suma, Sandra Rhea Samson, S. Saranya, G. Shanmugapriya, R..Subhashri (2017). "IOT Based Smart Agriculture Monitoring System". International journal on recent and innovation trends in computing , energy efficiency and communication-IJRITCC volume: 5 issue:

[4] PaparaoNalajala, D. Hemanth Kumar, P. Ramesh and Bhavana Godavarthi, 2017. Design and Implementation of Modern Automated Real Time Monitoring System for Agriculture using Internet of Things (IoT). Journal of Engineering and Applied Sciences, 12: 9389- 9393.
[5] R. Nageswara Rao, B. Sridhar, (2018). IoT based smart crop field monitoring and automation irrigation system. Proceeding of the second international conference on inventive system and control (icisc2018). [22] Sahitya. Roy, Dr Rajarshi. Ray, Aishwarya Roy, Subhaji
[6] B J Bose, K. Schofield, and M. L. Larson, "Rain sensor"
[7] Bindu D et al, International Journal of Engineering, Basic sciences, Management and Social studies, Volume 1, Issue 1, May 2017.