

# Smart Crop Protection System Using IOT

Shishir Bagal<sup>1</sup>, Krunal Mahajan<sup>2</sup>, Riya Parate<sup>3</sup>, Ekta Zade<sup>4</sup>, Shubham Khante<sup>5</sup>

<sup>1</sup>Professor & HOD, Department of Electronics Engineering, K.D.K.C.E, Nagpur, India

<sup>2,3,4,5</sup>Student, Department of Electronics Engineering, K.D.K.C.E, Nagpur, India

**Abstract - This paper defines the methodology used in the smart crop protection system. The purpose of SCPS is to secure or protect the farm from the theft in the farm or main purpose of this project is to alert the farmer as well as fear the animals with getting harm to animals.**

**Index Terms - SCPS, IOT, SD card module, flame sensor, farm.**

## 1.INTRODUCTION

The Smart protection system defines that this project help to farmer for the protection of a farm. We have designed this project for the only secure from animals but we this project have the provision to secure from the human begins also. This can achieve by the help of IOT device that we are discuss in this paper. The SCPS work on the battery so that this project can be easily portable and also we are add solar panels and converter modules this can help the battery to charge from solar energy. The IOT device is used to indicate the farmer by a message while someone enter into the farm and we are used SD card module that helps to store a specified sound to fear the animals.

## 2.METHODOLOGY

This project is smart crop protection system for protect the farm from animals as well as unknown person. This projects contents arduino UNO, Nodemcu, LCD display, PIR sensor,flame sensor,sd card module,solar panel,solar charges converter. This whole project is work on 12v dc supply from battery. We used solar panel to charge the battery. The other components used are as follows.

### Components Required

#### 1. Arduino UNO

The Uno R3 development Board is the low-fee version of the famous Uno R3 Arduino. it is assembled with the CH340 USB to Serial converter chip, in preference to the use of an Atmega16U2 chip.

This can help to process the sensor data of projects and show the action on lcd display. We have used lots of these low-fee Arduino boards with CH340 chips, and have discovered them to paintings perfectly.



Fig 2.1: - Arduino Uno Board

The features of Arduino Uno are as follows.

- The operating voltage of Arduino is 5V.
- The recommended input voltage will range from 7v to 12V and the input voltage ranges from of Arduino is (6v to 20V)
- Digital input/output pins of Arduino are 14 from those Analog i/p pins are 6 and other are digital pins.
- It can be give dc Current 50 mA on 3.3V Pin
- The memory available in arduino is Flash Memory is 32 KB, SRAM is 2 KB, EEPROM is 1 KB
- Arduino CLK Speed is 16 MHz.

#### 2. NodeMcu

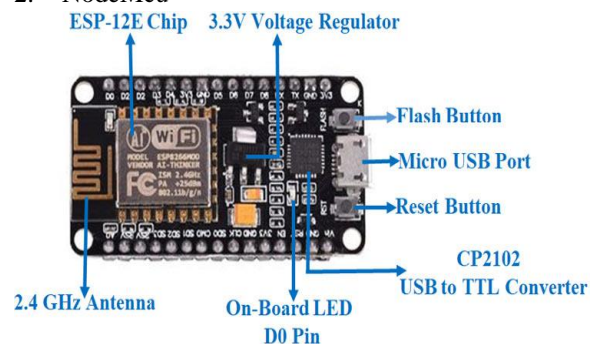
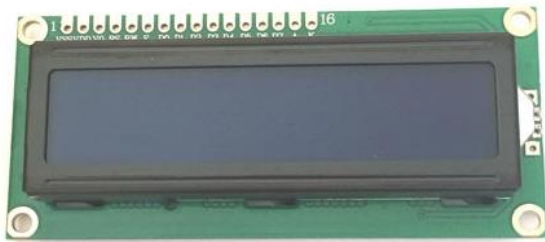


Fig 2.2: pin description of Nodemcu

The Nodemcu is micro controller-based wifi module that makes it a tremendous choice for the internet of things (IoT) tasks of all kinds. This controller is used as a IOT devices that help use to send the alert message via blink application.

NodeMCU/ESP8266 has 17 GPIO pins which may be assigned to features consisting of I2C, I2S, UART, PWM, IR remote manage, LED mild and Button programmatically. Each digital enabled GPIO may be configured to internal pull-up or pull-down or set to excessive impedance.

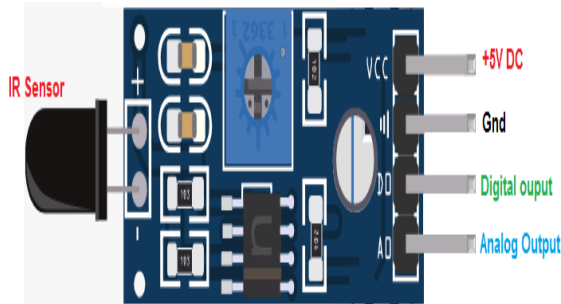
### 3. LCD display



**Fig 2.3: LCD display16x2**

This LCD display is used to show the status as well as sensor output. It has 16column and two rows. And it works with 5v dc power supply.

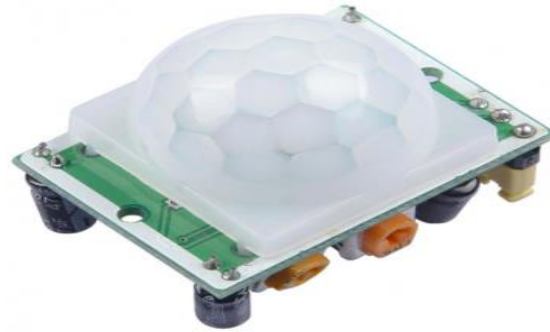
### 4. Flame sensor



**Fig 2.4 : Flame sensor Module**

Flame sensor is the most sensitive to regular mild that is why its reaction is normally used as flame alarm purposes. This module can come across flame or wavelength in 760 nm to 1100 nm range of light supply. Small plate output interface can and single chip can be at once related to the microcomputer IO port. The sensor and flame need to maintain a sure distance to keep away from high temperature damage to the sensor. The shortest take a look at distance is eighty cm, if the flame is greater, test it with farther distance. The flame sensor detects the fire and via blink application send give alert messages to famer.

### 5. PIR sensor



**Fig 2.5: PIR sensor module**

Flame Sensors, Smoke Sensors, hearth Alarms and many others. Are parts of a safety equipment that help us in maintaining our homes, offices and stores safe from fire accidents. Nearly all modern-day houses, flats, malls, cinema halls, theatres, office buildings and stores are prepared with such protection system and it's miles obligatory in some regions to fireplace protection devices.

Flame Sensor has three pins (a few may additionally have 4 pins): VCC, GND and DO. join VCC and GND to 5V and GND of the strength supply (can be connected to Arduino's 5V). The DO (quick for digital Output) is connected to virtual I/O Pin of Arduino.

### 6. SD card Module



**Fig 2.6 SD card module.**

The Micro SD Card Module has SPI interface that is well matched with any sd card and it use5V or three.3V strength supply which is compatible with maximum micro controllers forums.SD module has diverse packages which include records logger, audio, video, pix. This module will significantly increase the capability an Arduino can do with their negative restricted memory.

Therefore the pins on an SD Card Module are as given below.

VCC, GND, MOSI – Master OUT Slave IN (Input),MISO – Master IN Slave OUT (Output),SCK – SPI Clock, CS–Chip Select (Input).

7. Solar panel



Fig 2.7: solar panel 12volt.

8. Solar charged converter (boost converter)



Fig 2.8: Boost Converter

This boost converter helps to provide constant voltage and appropriate current to battery to charge efficiently.

### 3.CONCLUSION

In this way we have design our smart crop protections system using IOT These different components are helps us to build the mythology of this project and improve the more feature with the help of IOT devices.

### REFERENCES

[1] Krunal Mahajan<sup>1</sup>, Riya Parate<sup>2</sup>, Ekta Zade<sup>3</sup>, Shubham Khante<sup>4</sup>, Shishir Bagal<sup>5</sup>,” REVIEW PAPER ON SMART CROP PROTECTION SYSTEM”, International Research Journal of Engineering and Technology (IRJET), Volume: 08, issue 02 Feb 2021.

[2] <https://www.electronicshub.org/arduino-flame-sensor-interface/#:~:text=Flame%20Sensor%20has%20three%20pins,fire%2C%20a%20Buzzer%20is%20used.>

[3] Dr.M. Chandra, Mohan Reddy, Keerthi Raju KamakshiKodi, BabithaAnapalliMounikaPulla, “SMART CROP PROTECTION SYSTEM FROM LIVING OBJECTS AND FIRE USING ARDUINO”, Science, Technology and Development, Volume IX Issue IX, pg.no 261-265, Sept 2020.

[4] Anjana, Sowmya, Charan Kumar, Monisha, Sahana, “Review on IoT in Agricultural Crop Protection and Power Generation”, International Research Journal of Engineering and Technology (IRJET) , Volume 06, Issue 11 ,Nov 2019.

[5] G. NaveenBalaji, V. Nandhini, S. Mithra, N. Priya, R. Naveena, “IOT based smart crop monitoring in farmland”, Imperial Journal of Interdisciplinary Research (IJIR), Volume 04, Issue 01, Nov 2018.

[6] P.Rekha, T.Saranya, P.Preethi, L.Saraswathi, G.Shobana, “Smart AGRO Using ARDUINO and GSM”, International Journal of Emerging Technologies in Engineering Research (IJETER) Volume 5, Issue 3, March 2017.

[7] Tanmay Baranwal” Development of IOT based Smart Security and Monitoring Devices for Agriculture”, Department of Computer Science Lovely Professional University Phagwara, Punjab, IEEE-2016.

[8] M. Sathishkumar<sup>1</sup>, S.Rajini “Smart Surveillance System Using PIR Sensor Network and GSM” International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume4 Issue 1, January 2015.