

# Crop Disease Detection and Border Alert System for Fishermen Using IOT

**Dr. S.Prema<sup>1</sup>, Dr.K.M.Sharavana Raju<sup>2</sup>, M.Sivagami<sup>3</sup>, K.Saranaya<sup>4</sup>**

Assistant Professor, Department of Computer Science (PG), K.S.Rangasamy College of Arts and Science<sup>1</sup>

Department of Computer Science, College of Computer Science & Information Technology,

JAZAN University, Kingdom of Saudi Arabia<sup>2</sup>

M. Sc (CS), Department of Computer Science (PG), K.S.Rangasamy College of Arts and Science<sup>3,4</sup>

**Abstract:** Nowadays the farmer and the fisherman have many problems in the world. In agriculture the crops are affected by the disease with causes by the insects and pets and in another hand the fishermen are being killed for crossing the boundary of the neighbouring country. This project is used to give a deep description about the crop disease detection (case 1) and the border alert detection (case 2) using IoT. This paper include various features like detection of leaf disease, server based remote monitoring system, humidity sensing and temperature of the soil sensing for developing the agriculture and also include various features for alerting the fishermen while crossing the boundaries of neighbouring countries to save the fishermen life.

**Keywords:** Arduino Uno, Soil Moisture Sensor, Humidity Sensor, Temperature Sensor, Wi-Fi Module,GPS (Global Position System) module,GSM(Global System Mobile for communication),LCD Display,Engine controllerr and Power supply

## I. INTRODUCTION

### Case Study 1:

Agriculture is a backbone of Indian economy. In India about sixty four percent of the total population is in need of agriculture for their live food. IoT sensors are capable of providing farmers with data about crop yields, rainfall, pest infestation, and soil sustenance. They are invaluable to farmers and offer exact data which can be used to improve farming techniques over time. Crop checking can be easily done to observe the growth of crop.

### Case Study 2:

The main idea of this paper is to give precaution to the fisherman about border crossing. If they cross the border, then they are being killed by other state people. So, in this project aims to build a system with GPS and GSM to safe guard the fisherman. An embedded system is a special-purpose computer system intended to achieve one or a little dedicated functions, often with real-time computing restrictions. It is usually embedded as part of a complete device with hardware and mechanical parts. In contrast, a general-purpose computer, such as a personal computer, can do many different tasks depending on software design. Embedded systems have turn into very significant today as they control several of the common devices we use.

## II. EXISTING SYSTEM

### Case Study 1:

The user has to upload photos of the diseased part of plant on the app and within seconds identify the disease and its solution.



Figure 1. Pestoz

Pestoz as in Fig.1 (one of the applications related to plant leaf disease detection) is 24X7 crop doctor who helps the farmer in identifying plant / crop diseases by clicking photos through your phone camera within seconds.

Two step process to use the app

- Select the plant/crop with the disease.
- Upload the photo of the disease infected part on the app. Within few seconds, you will get the disease report and its clarification.

### Case Study 2:

In existing system, PIC16F877A Micro controller interfaced with GPS GSM is used. If the location of the border is crossed then the fisherman will get the alert by using Buzzer and they will be notified through SMS only.

## III. PROPOSED SYSTEM

**Case Study 1:** If the disease is caused in the crop, it is detected by the camera. Through image processing the disease is detected through the visually symptoms of the plant. The proposed system developed using android application gives the solution according to the disease. The treatment is suggested to reduce the damage levels. The proposed system will thus improve the productivity and give benefits in the irrigation sector. It provides agriculture solution using Machine learning algorithm in Artificial Neural Network. Automated sensor as in Fig.2 is used for performing data prediction on data sensed by sensors.



Figure 2. Automated Sensor

**Case Study 2:** In this project embedded based model as in Fig.3 is developed to save the fishermen life. This device consists of GPS receiver which continuously receives the GPS location of the fishermen. The current value is compared with the predefined value and if these values are same or greater than the predefined value, a warning message is sent to the fishermen and coastal guard. The region is separated into normal zone and warning zone. When the boat is within normal zone, the LCD display shows that the boat is in normal area. In case it moves and reaches the warning area then the LCD display shows that the boat is in the warning zone. The alarm continues to beep, at once the boat touches the restricted zone and the alert message will sent to the fishermen and the navy guard and it reduced the speed of the boat.

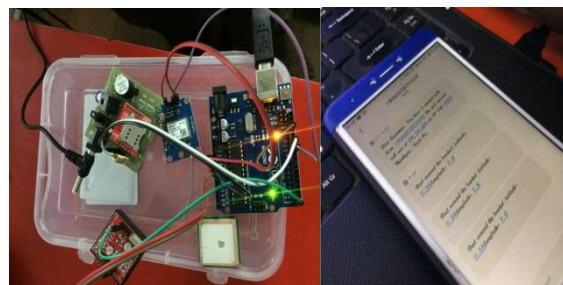


Figure 3. Embedded based model

## IV. COMPONENT REQUIRED

### Case Study 1:

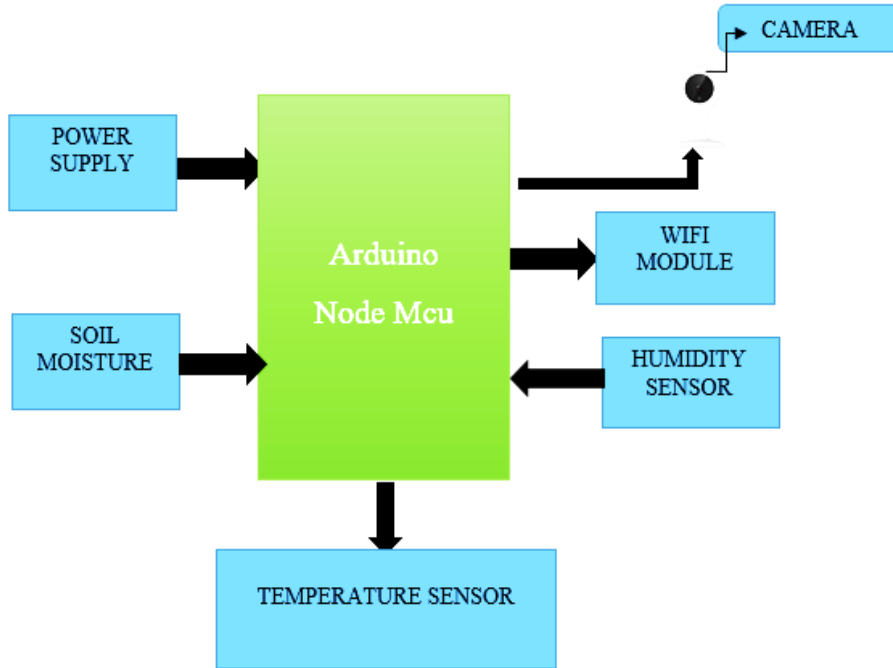
- Arduino Uno
- Soil Moisture Sensor
- Humidity Sensor
- Temperature Sensor
- Wi-Fi Module

### Case Study 2:

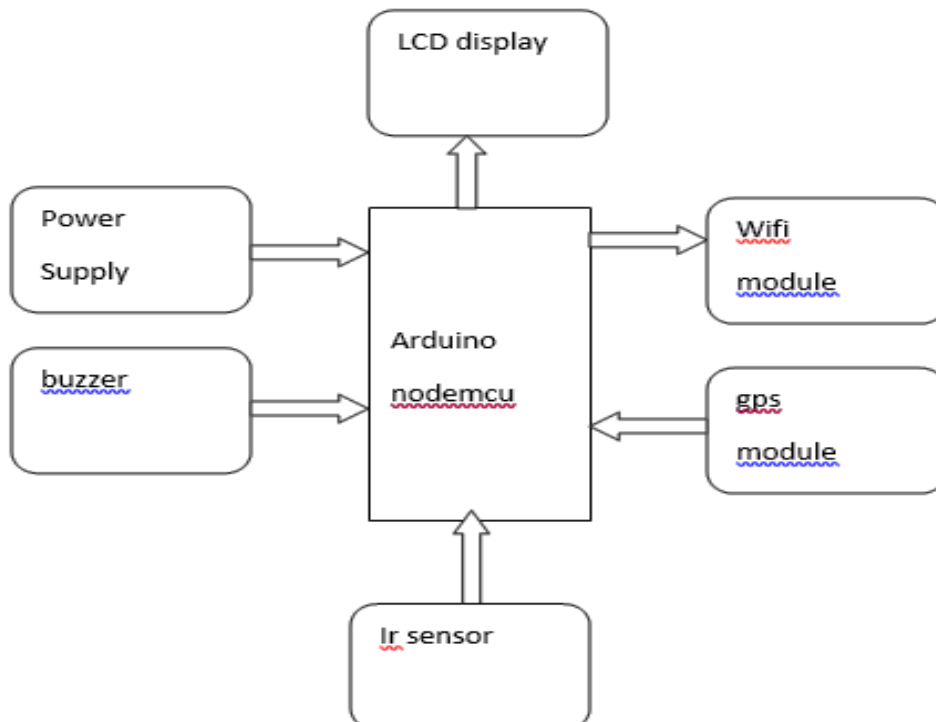
- GPS (Global Position System) module
- GSM(Global System Mobile for communication)
- LCD Display
- Engine controller
- Power supply

## V. BLOCK DIAGRAM

### Case Study 1:

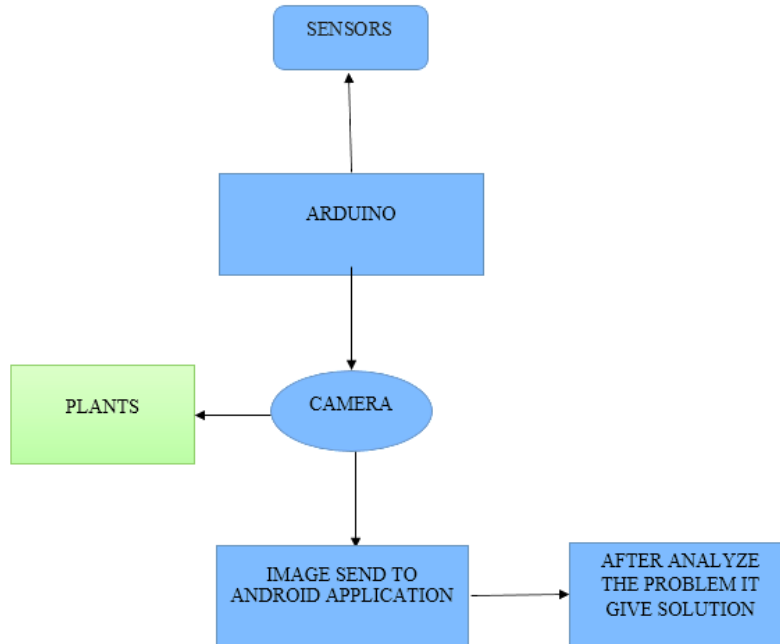


### Case Study 2:

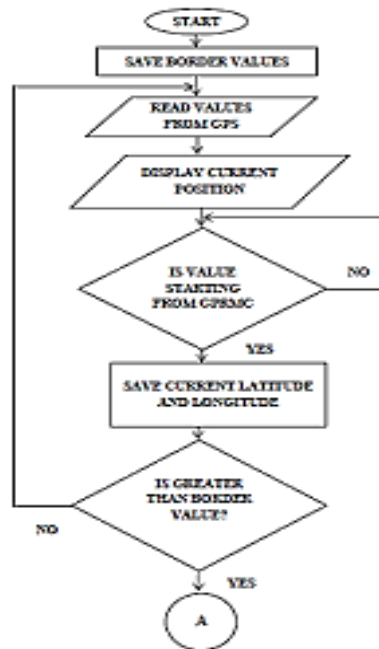


**VI. WORK FLOW**

**Case Study 1:**



**Case Study 2:**



**VII. CONCLUSION**

**Case Study 1:**

Digital capturing of visually observed symptoms on the stem and leaf of the plant and images processing on it is used for detecting the plant disease at an early stage. Treatment is suggested corresponding to the recognized ailment which will help farmers with low experience to prevent the vegetation. Smart irrigation environment helps to optimize the water usage in the field and provides a remote controlling and monitoring for the irrigation system. The system communicates and processes data from sensors and using android application as user interface, notification about humidity and moisture level is given to the farmer so as to control the water supplied to the farm.

**Case Study 2:**

GPS and GSM facilities in Android phone will help the workflow of the proposed system. The fisherman, while navigating crosses the nautical boundary, accidentally as they are unable to visualize it in the ocean which causes loss to their life. Through this system an Android Application based security system is provided to the fisherman so that they can discover the location when they are in danger. Thus the fishermen can easily find the sea borders and therefore prevents them from entering their area. This project save the lives of fisherman and provide good relationship with the border countries.

**REFERENCES****Case Study 1:**

[1] Chandan Kumar, pramitee behera "A Low Cost Smart Irrigation Control System", International Conference on Electronics and Communication System (icecs 2015) ieee 1146.

**Case Study 2:**

- [1]. R.M. Bhardwaj, "Overview of Ganga River Pollution", Report: Central Pollution Control Board, Delhi, 2011
- [2]. NivitYadav, "CPCB Real time Water Quality Monitoring", Report: Center for Science and Environment, 2012
- [3]. Tuan Le Dinh, Wen Hu, PavanSikka, Peter Corke, L. Overs, Stephen Brosman, "Design and Deployment of a Remote Robust Sensor Network: Experiences from Outdoor Water", 32nd IEEE Conf. on Local Computers, pp 799-806, Feb., 2007
- [4]. Quio Tie-Zhn, Song Le, "The Design of Multiparameter On line Monitoring System of Water Quality based on GPRS", Report: Advanced Transducers and intelligent Control System Lab, Taiyuan Technical University, Taiyuan, China, 2010
- [5]. Steven Silva, Hoang N Ghia Nguyen, Valentina, Tiporlini, Kamal Alameh, "Web based Water Quality Monitoring with Sensor Network: Employing ZigBee and WiMAX Technology", 36th IEEE Conf. on Local Computer Networks, 2011
- [6]. Donge He, Li-Xin Zhang, "The Water Quality Monitoring System based on Wireless Sensor Network" Report: Mechanical and Electronic Information Institute, China University of GeoScience, Wu Hen, China, 2012
- [7]. Pavlos Papageorgiou, "Literature Survey on Wireless Sensor Networks", Report: University of Maryland, 16 July 2003
- [8]. SatishTurken, Amruta Kulkarni, "Solar Powered Water Quality Monitoring System using Wireless Sensor Network", IEEE Conf. on Automation, Computing, communication, control, and compressed sensing, pp281-285, 2013
- [9]. Liang Hu, Feng Wang, Jin Zhou and Kuo Zhao "A Survey from the Perspective of Evolutionary Process in the Internet of Things", International Journal of Distributed Sensor Networks, Article ID 462752, 2015
- [10]. ThingSpeak-Understanding your Things-The open IoT Platform with MATLAB analytics, MathWorks
- [11]. User Manual Arm7-LPC2148 Development kitPantech Solutions.
- [12]. ESP8266 serial Wi-Fi wireless Transceiver Module for IoT, ESPRINO-Wireless.