

Agricultural Fire Protection System

Kalpita Raut¹, Dakshat Patil², Priyanka Pawar³, Anojkumar Yadav⁴

^{1,2,3,4} Dept of Electrical Engineering

^{1,2,3,4} VIVA Institute of Technology, Virar

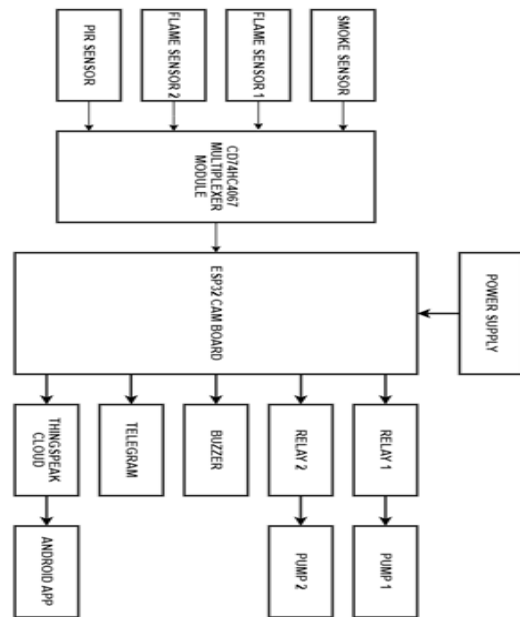
Abstract- Fire is an unexpected incident that causes a huge loss for farmers. The proposed system uses a group of sensors to detect the fire in the field including a Flame sensor, Light sensor, and ESP 32 CAM, and alert on mobile. The proposed system is divided into two subsystems named Fire detection system to detect fire, Fire prevention system by using the motor pump. This pump runs continuously without fail or any intervention. As the detection of the fire, the automated system ON only if no action is taken by the farmer for the given timestamp. The system continuously examines the data coming from the sensors in the field and stores the data in Firebase then analyzing the data based on the algorithm and stops the fire before it spreads in the crop.

Keywords- detect the fire, Firebase, system triggers, FPS using the motor pump., data coming from the sensors, alert on mobile, Flame sensor, Light sensor, and ESP32 CAM

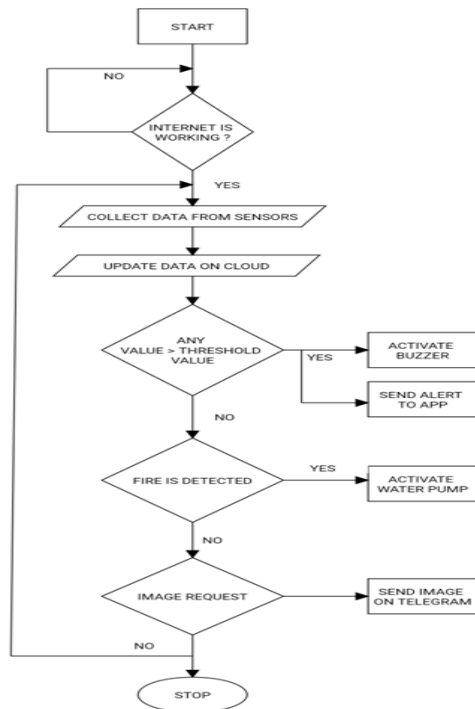
I. INTRODUCTION

Agriculture is one of the most important and essential source for the farmers and business in India and it considered to be the backbone of country's economy. In recent years, Indian agriculture often affected due to various changes. Mostly by fire incident. Fire is one of unpredicted and unknown events that harm the productivity of farmers. Due to this they lost their crops. In India mostly in summer this incident is happen due high atmospheric temperature. the temperature is raised up to 45 degrees during April to Jun month and this the main period in which fire incidents are happen. Therefore, we need to invent something to stop or prevent these things before it happens. At the current situation there is need of automation in agricultural sector for protection of crop. So we can make system to protect crop by using IOT to prevent fire incidents in farm.

II. BLOCK DIAGRAM



III. FLOW CHARTFLOW CHART



IV. PROPOSED METHODOLOGY

1. The system uses ESP32 Cam as the microcontroller.
2. It has an inbuilt camera slot along with Wi-Fi which makes it easier to use it for IoT Applications.
3. A smoke sensor and two flame sensors are used for detecting fire.
4. If there is a fire outbreak then the relays and then the pump motor gets activated.
5. A PIR Sensor is used to detect animals entering into farms.
6. Data is stored to IoT Server i.e., ThingSpeak and can be accessed from Android App.
7. Android App shows current status of system as well as It can be used to get live images of the farm over Telegram.
8. A buzzer gets activated in case of any alert and also alerts are sent to Android App.

V. CONCLUSION

This project has explained an agriculture fire protection system model where the Internet of Things and embedded automations are applied for early detection of flames in the field. This system is made smart and automated with the implementation of IOT devices using sensors. Any method that detects the fire will turn on the buzzer and activates the water sprinkling system to extinguish the fire. This system is runs automatically and decrease the that is occurs due to field. A PIR Sensor is also used to detect animals entering into farms. Monitoring of farm using

Android App through ESP32 camera is also possible in this system

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