**Project Design Phase-I**

**Proposed Solution Template**

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| Date | 25 September 2022 |
| Team ID | PNT2022TMID23095 |
| Project Name | Project – IoT-Based Smart Crop Protection System |
| Maximum Marks | 2 Marks |

**Proposed Solution Template:**

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| **S. No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | An intelligent crop protection system helps the farmers in protecting the crop from the animals and birds which destroy the crop. This system also helps farmers to monitor the soil moisture levels in the field and also the temperature and humidity values near the field. The motors and sprinklers in the field can be controlled using the mobile application. |
|  | Idea / Solution description | In our proposed solution, when the animal enters the farm area, the LDRs placed in the vertical positions help us to detect the size of the animal whereas PIR sensors are used to detect the position of the animal. Immediately, the APR board will be on, and the sound is played to divert the animal. During night time the flashlight will be on and the message will be sent to the farmer. The LCDs sense the presence of animals as readings. The esp8266 Wifi module is used for sending a warning message the farmer of the intrusion. This device is using Embedded PIC Microcontroller. It comprises LCD (16×2) (JHD162A), PIC Microcontroller, Arduino Uno,PIEZO Buzzer, esp8266 Wifi module, Humidity sensor, pH sensor, Gas sensor, rheostat (10k),battery 9v, and LED. Whenever there is an attack by animals on crops in the agriculture field, this system detects the sound produced by the buzzer and generates an SMS alert via IFTTT within seconds to the field owner. This device is based on a motion-detecting sensor and is developed especially for crop monitoring in agriculture fields, farms, wetlands, forests, etc. Wifi module technology is used to send SMS alerts via IFTTT to users on mobile whenever there is a fire broke out in the field. It will also generate a buzzer sound to alarm nearby people to take proper action to diminish crops protected by smart farming.An enhanced feature of detecting the nutirents percentage in the soil is detected by the above mentioned sensors and warning the farmer incase of low amount of nutrients, therby protecting crops from any kinds of nutrients deficiency. This device also detects which crop an be cultivated in the soil.All the data from the sensors are stored in Thingspeak server which could be viewed in their website. |
|  | Novelty / Uniqueness | * Proposing a system that sounds through solar animal repellent when animals try to enter the farm. * In night, the flashlight will focus on protecting the farm and a message will be sent to the farmer. * The system is capable of turning on / off automatically and warding off the animals thus protecting the fields from any damage also we can set up a Timer as per the farmer's requirement |
|  | Social Impact / Customer Satisfaction | This project carries great social relevance as it aims to address this problem. This project will help farmers in protecting their fields and save them from significant financial losses and will from the unproductive efforts that they endure for the protection of their fields. This will also help them in achieving better crop yields and  thus, leading to their economic well-being. |
|  | Business Model (Revenue Model) | To Implement this project as a real-time product that includes everything within a single small package. This shall create a revolution in the agriculture industry. The product shall act as an Agri Bot that minimizes the labour of farmers in addition to increasing the productivity of crops. The quality of the crop can be enhanced as it incorporates the levels of soil moisture, temperature, and humidity of the field. |
|  | Scalability of the Solution | The product can be handled by every common person. This product can be made available at all the Agro Stores. As the product can be operated in any condition, this helps the farmer to protect the farm from animals and birds without getting harm to them. |