**Project Design Phase-I**

**Proposed Solution Template**

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| **Project Title** | IoT Based Smart Crop Protection System for Agriculture |

**Proposed Solution Template:**

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| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | Overuse of pesticides and fertilizer in agricultural fields leads to destruction of the crop as well as reduces the efficiency of the field increasing the soil vulnerability toward pest. IoT applications may be used to update the farmer/user about type & quantity of pesticide required by the crop and also protecting crops from wild animals attacks birds and pests. |
|  | Idea / Solution description | Moisture sensor is interfaced with Arduino Microcontroller to measure the moisture level in soil and relay is used to turn ON & OFF the motor pump for managing the excess water level. It will be updated to authorities through IOT. There are temperature sensors connected to microcontroller which is used to monitor the temperature in the field. Image processing techniques with IOT is followed for crop protection against animal attack. |
|  | Novelty / Uniqueness | The uniqueness of this system is that it detects the movement of animals and alerts the farmers and senses the moisture level and automatically turns on sprinklers without any human intervention. And the automatic crop maintenance and protection using embedded and IOT Technology. |
|  | Social Impact / Customer Satisfaction | This prototype can be developed as product with minimum cost with high performance. Also, the device won’t harm the animals and birds. And the system’s sustainability towards any environmental conditions are remarkable. |
|  | Scalability of the Solution | Crop protection systems can be scaled up in many different ways. This notion offered an effective IoT based, real-time crop protection model based on this methodology for enhancing crop productivity. With the addition of various technologies, this system can be scaled. Even in unfavourable circumstances, additional sensors can be utilised to monitor animal position and movement as well as soil moisture levels. Monitoring the locations can also be done using websites and mobile apps. |