

Project Design Phase-II Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID33661
Project Name	IOT Based Smart Crop Protection System for Agriculture
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

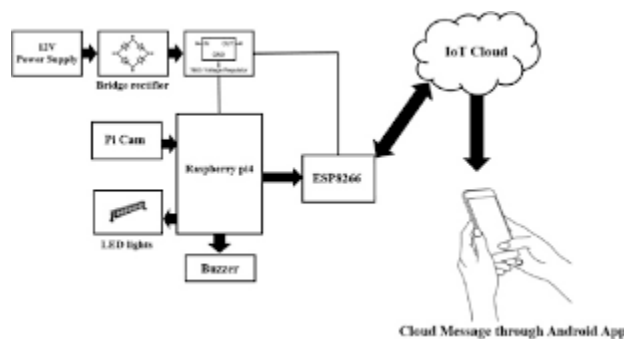


Table-1 : Components & Technologies:

S.N o	Component	Description	Technology
1.	User Interface	These are mostly used to assess the significant soil characteristics to analyze the soil nutrient levels, such as pH	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	These sensors test the soil's ability to reflect light based on different parts of the electromagnetic spectrum	Java / Python
3.	Application Logic-2	Optoelectronic sensors can differentiate plant type; hence, they help to detect weeds	IBM Watson STT service
4.	Application Logic-3	This type of sensor can be used for quantifying exchanges of carbon dioxide, water vapor, methane or other gas, and energy between the surface of the earth and the atmosphere.	IBM Watson Assistant
5.	Database	integer,string	MySQL, NoSQL, etc.

6.	Cloud Database	MS Azure	IBM DB2, IBM Cloudant etc.
7.	File Storage	This technology is widely used in a range of agriculture applications, such as land mapping and segmentation,	IBM Block Storage
8.	External API-1	Sensors belong to this category are used to capture and store the geographic information,	IBM Weather API, etc.
9.	External API-2	. In some crops, this is done a single time while, in some others, performed several times	Aadhar API, etc.
10.	Machine Learning Model	Harvesting the crop at the right time is very critical, as doing so either early or late can affect the production significantly	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	In order to automate the harvesting process and make it more precise, the role of robots has been increasing over the recent decades.	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	KAA IoT	Robots, drones, remote sensors, and computer imaging
2.	Security Implementations	Implement device data protections	Apply Network Segmentation for Stronger Defense
3.	Scalable Architecture	use separate systems called web workers where the pool can dynamically grow for data storage and analysis	suggest corrective measures using high-end applications
4.	Availability	Considering such complexity, many robots are being developed for specific crops.	Manufacturing & Agriculture

