Ideation Phase
Literature Survey

Date	9 September 2022
Team ID	PNT2022TMID05038
Project Name	SmartFarmer - IoT Enabled Smart Farming Application
Maximum Marks	4 Marks

Introduction:

Internet Of Things (IoT) is a technology which has brought revolutionary changes to all sectors of the world. It makes life simpler and easier which allows them to work better and gain better work experience. One of the major sectors in which IoT has brought major change was the agriculture sector which could be termed as Smart Farming or Precision Agriculture. This involves monitoring various parameters which enhances the growth of the plant these factors includes :

- Soil Moisture.
- Wind Direction.
- Atmospheric Pressure.
- Altitude.
- Rainfall.
- Micro and Macro nutrients

By monitoring the above mentioned factors we could precisely monitor the growth of the plant leading to good yields and healthy vegetables and fruits.

Survey Performed:

Reference 1	Title	Smart Farming: IoT Based Smart Sensors Agriculture Stick for Live Temperature and Moisture Monitoring using Arduino, Cloud Computing & Solar Technology
	Authors	Anand Nayyar (*Assistant Professor, Department of Computer Applications & IT KCL Institute of Management and Technology, Jalandhar, Punjab*)
		Er. Vikram Puri (*M.Tech(ECE) Student, G.N.D.U Regional Center, Ladhewali Campus, Jalandhar*)

Inference from reference 1 :

IoT Enabling Technologies described here are:

1. Wireless Sensor Network (WSN):

   Consists of various wireless sensor systems which collect data from the environment. They are all interconnected to form a grid of data collection points.

2. Cloud Computing :

   It is an on demand computing resource provided by third party services like AWS, Microsoft Azure, IBM Cloud.

3. Communication Protocols:

   They form the backbone of IoT systems to enable connectivity and coupling to applications and these protocols facilitate exchange of data over the network as these protocols enable data exchange formats, data encoding and addressing.

Reference 2	Title	IOT Based Smart Farming for Effective Utilization of Water and Energy
	Authors	K.N.Sivabalan
		V.Anandkumar
		S.Balakrishnan

Inference from reference 2 :

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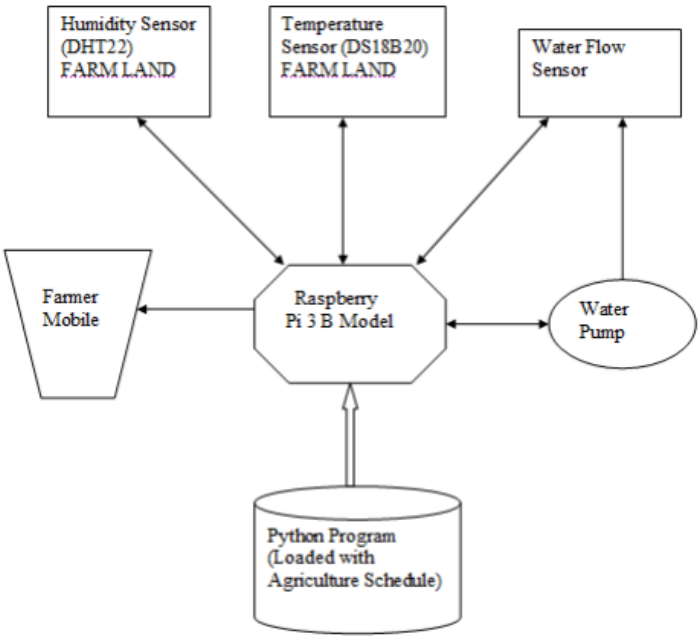

Fig 1. Architecture of System

Working Sequence as mentioned in the reference 2:

Smart farming for the groundnut crop is done with the assistance of Internet of Things (IOT) and Raspberry pi 3 B model kit. The temperature is monitored with the assistance of DS18B20 temperature sensor and connected with Raspberry Pi kit. The ideal temperature for Groundnut is 27 degree celsius to 32 degree celsius. If the temperature goes beyond 32 degree celsius. The Moisture sensor REESS2 soil sensor is used to indicate the level of moisture for Groundnut crop. The ideal temperature required for Groundnut is 30cm to 65cm. This sensor measures the moisture content and intimates to raspberry pi Kit. This sensor will be housed in the farm land. If the moisture content measured is below 30cm then the python program which operates raspberry pi will send an ON signal and the Motor pump will be switched on and continues to run until it reaches 65cm moisture content. Once it reaches the maximum threshold the raspberry pi will send the OFF signal which eventually switches off the pump. If the moisture content reaches beyond 55cm the water flow sensor will be limiting the flow of water in order to conser ve water The cultivation and yield of Groundnut crop is also determined by supplying appropriate fertilizers for crop. The proper fertilizers required for Groundnut crop is 20 kg of Nitrogen, 15kg Phosphorus pentoxide and 12kg of Potash after the sowing the crop within 2 days and 15kg of nitrogen is required as a top up after 20 to 30 days of crop growth. This is programmed in python and intimation is given to the Farmer in the form of SMS in appropriate time frame so that to ensure proper yield of the crop with effective time frame.

Conclusion :

Hence from the above references now we would be able to construct an autonomous crop monitoring system.