Smart Agriculture System based on IoT

PROJECT SUMMARY

The ever growing population across the globe is a major problem as there will be more mouths to feed but less hands to grow crops. The technology has grown in every field since the last decade and it will continue to grow so that output in every sector is optimized. The agricultural field also looks forward for technology to extend a helping hand in increasing the productivity. A smart agriculture system based on IoT helps farmers to achieve this aim. A mobile application that can provide farmer with details like soil moisture, realtime weather forecasting data, temperature, humidity, etc will fulfill all the needs. Using this information a farmer can decide whether to water the crops or not. The water pumps can be activated/deactivated using the same app from anywhere. The realtime weather forecasting is achieved using Open Weather API. We have also used online IoT simulator to get data like temperature, humidity and soil moisture.

PROJECT REQUIREMENTS

The smart agriculture system based on IoT requires the following tasks that needs to be completed for the successful implementation of this project: -

- The IoT simulator should be successfully connected with the IBM Watson IoT platform
- Configure the NodeRed to get the data from IBM IoT platform and Open Weather API
  - Install the required nodes in your NodeRed
  - Connect to your IBM IoT Device to get the Simulator Data
  - Create an account in Open Weather API and configure your Open Weather API Platform
  - Configure NodeRed to get the Weather Forecasting Data using HTTP request
- Building a web app
  - Configure the nodes to display the weather parameters which we got from IoT simulator Open Weather API in UI
  - Configure nodes for creating buttons and sending commands to IoT platform
- Configure your device to receive the data from the web application and control your motors
  - Write a python code to subscribe to IoT platform and get the commands

FUNCTIONAL REQUIREMENTS

This system is built for the farmers to help them take better care of their crops to increase productivity and thereby increasing profits. The system can offer various services listed below:-

- This system can provide details of relatime weather conditions like temperature and humidity.
- This system can provide soil moisture content to the farmer.
- Using these details a farmer can decide whether to irrigate the crops or not. This system allows farmer to turn on/off water pumps from anywhere according to their convenience.

TECHNICAL REQUIREMENTS

The smart agriculture system based on IoT uses the following technical tools to complete the project: -

- IBM Cloud PLatform
- IBM Watson IoT Platform
- Node - Red
- Open Weather API

SOFTWARE REQUIREMENTS

Processor: i3 7th gen or higher
Speed: 2GHz or more
Hard disk space: 10GB or more
Operating system: Windows XP or more
Browser: Google Chrome/ Mozilla Firefox

PROJECT DELIVERABLES

This smart agriculture system created will be able to notify the farmer the weather conditions and soil moisture content. Using these details a farmer can decide to activate/deactivate the water pumps. These activities can be handled by the farmer from anywhere.

PROJECT TEAM

Individual Work: Anshika Goel