SMART AGRICULTURE SYSTEM BASED ON IOT

***Project Summary***

Smart farming is a capital-intensive and hi-tech system of growing food cleanly and sustainable for the masses. It is the application of modern ICT (Information and Communication Technologies) into agriculture.

In IoT-based smart farming, a system is built for monitoring the crop field with the help of sensors (light, humidity, temperature, soil moisture, etc.) and automating the irrigation system. The farmers can monitor the field conditions from anywhere. IoT-based smart farming is highly efficient when compared with the conventional approach.

The applications of IoT-based smart farming not only target conventional, large farming operations, but could also be new levers to uplift other growing or common trends in agricultural like organic farming, family farming (complex or small spaces, particular cattle and/or cultures, preservation of particular or high-quality varieties, etc.), and enhance highly transparent farming.

In terms of environmental issues, IoT-based smart farming can provide great benefits including more efficient water usage, or optimization of inputs and treatments. Now, let’s discuss the major applications of IoT-based smart farming that are revolutionizing agriculture.

***Requirements***

Internet of Things has a strong backbone of various enabling technologies.

**Functional Requirements**

* Install the web application and connect to Wi-Fi.
* The IBM IoT simulator reads the random temperature, humidity and soil temperature and will pass the data to the IBM Watson cloud Platform which are called as events.
* These events can be visible on the web application with the help of NODERED.
* The weather conditions which are noticed on the Open Weather API are passed to the NODERED which can be visible on the web application.
* Based upon the weather and soil conditions the farmer decides whether to ON/OFF the motor which helps in increasing the quality of production.

**Technical Requirements**

* **Performance:** Improves the performance of the agriculture system by monitoring the field in real time.
* **Crop Monitoring:** IoT sensors will enable the collection of crucial data such as soil moisture where it will be monitoring the crop health and soil composition.
* **Weather Monitoring:** By constant weather monitoring which alert farmers on changing weather conditions.
* **Management:** The Smart Agriculture systemensures proper water management for irrigation and in turn reduces water wastage.
* **Mobility:** Farmer can monitor and can be able to access the information remotely via smartphone.
* **Efficiency:** With the Smart Agriculture system, the efficiency level can be increased in terms of usage of soil, water etc.
* **Accuracy:** The Smart Agriculture system has high efficiency and accuracy in fetching the live data of temperature and soil moisture.

**Software Requirements**

* Open Weather API
* IBM IoT Simulator
* IBM Watson Cloud Platform
* NODERED
* HTTP/MQTT
* Python IDE

***Project Deliverables***

* Increases the quality of production.
* Increases the quantity of production.
* To reduce human efforts.
* Real-Time Data and Production Insight
* Improved Livestock Farming.
* Remote Monitoring.
* Efficient an d saves time.
* To design a model and connect it to the android app and cloud server.
* To enable farmers to have the live data of soil moisture, environment temperature at very low cost so that live monitoring can be done.

***Project Schedule***

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| **TOPIC** | **START DATE** | **END DATE** |
| SRS Documentation | 21-05-2020 | 24-05-2020 |
| Setup Development Environment | 23-05-2020 | 26-05-2020 |
| Backend design | 27-05-2020 | 31-05-2020 |
| Frontend design | 01-06-2020 | 05-06-2020 |
| Testing | 06-06-2020 | 11-06-2020 |
| Report | 12-06-2020 | 19-06-2020 |