IoT Platform Cloud Storage for Agricultural Application

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INDRODUCTION

The research focuses on IoT platform cloud storage for agricultural application, I will develop web/mobile application that it is a IoT analytics platform service that allows us to aggregate, visualize and analyze live data streams in the cloud, it provides instant visualizations of data posted by devices. It will view data value of temperature, soil moisture, humidity, PH, and solar radiation on dashboard as line charts and it will view videos record of plant growth from webcam in greenhouse on frontend and backend (web/mobile application).

OBJECTIVES

The farmers will able maintain, monitor, and control real-time environment information of the smart farm via mobile/web application , remotely or can be locally either, to ensure an environment conducive to the growth of plants at any time, from anywhere, through the Internet.

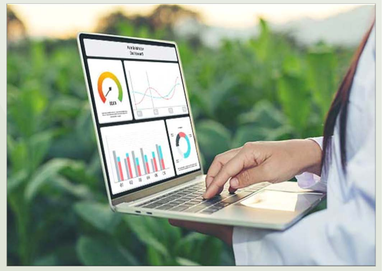

Fig. 1. Farmer views data on dashboard

Fig. 2. Smart Phone IoT device

Famers will able use IoT devices to measure temperature, humidity, moisture, webcam, and water PH values in the greenhouse. The captured those environmental factors are able to display on mobile/web application through some an internet cloud service.

Farmers will able to manually or automatically control the watering pump, and/or airflow fan to create suitable environment for growing the plants in the greenhouse. The real-time environmental parameters are able to display and control environment of the farm off-line or on-line.

Fig. 3. Remote Control Sensors

SYSTEM ARCHITECTURE

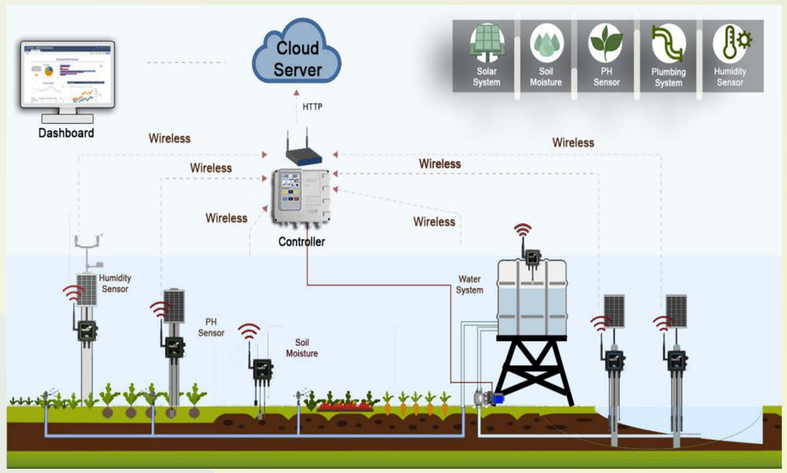

Fig. 4. System Architecture of Smart Irrigation

IoT platform cloud storage is a part of smart irrigation project, it will be designed for managing data of projects, user, device information, data collected from database after Sensor Node sends data to database, and all the data that stored on database will be monitored and managed on the front-end.

Fig. 5. IoT Cloud Storage

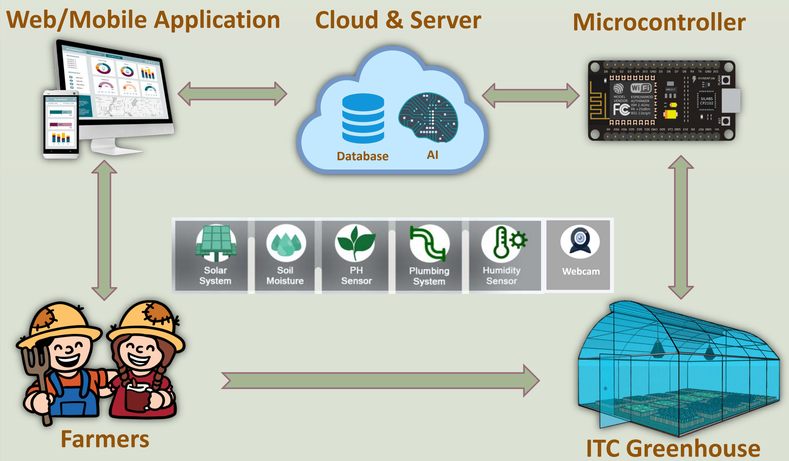

Fig. 6. The Proposed Smart Farm

It will be developed on the back-end and front-end, front-end will be developed to monitor the data of each project that contain sensor node through web application that is compatible on both mobile and computer and plot the information from the database, and backend will be developed for communication to front-end, data collections, and manages the data in the database that it also allows users to access information from the server.

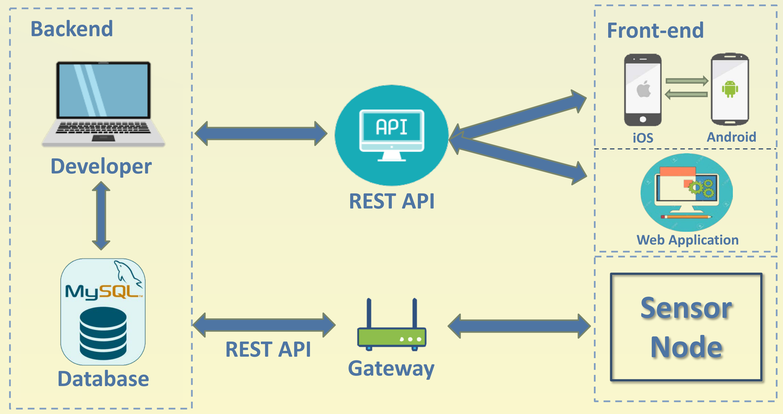

Fig. 7. Architecture of IoT Cloud Storage

- Web application will be developed by using Laravel 7 framework (using PHP language) with Bootstrap 4, and to develop a web application the code is written in HTML, CSS, and JS. The main goal in the web application is to communicate with the server, be able to send and collect data from database.
- Mobile application will be developed by using Flutter framework with Dart language that it will be able to develop both iOS and Android.
- REST API is used for communication between web application, mobile application, database, and sensor node.

CONCLUSIONS

This project is developing a smart irrigation for smart farm by deploying IoT technology. It based on monitoring systems are in great demand and gives a precise extraction and analysis of data. Using this system, a farmer can share/access the innovative techniques used by him/other farmers to improve the yield, can get the details about irrigation based on moisture control and temperature, crop maintaining information, pesticide details for his farm. Through this framework a farmer can get latest updates via smart-phone/web application.