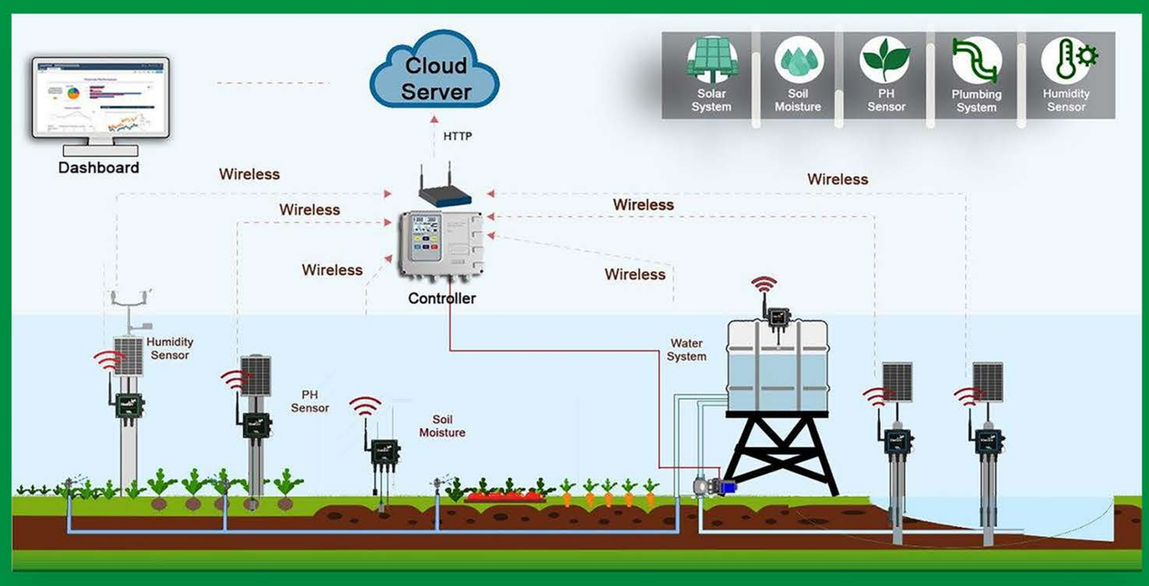
Development of online farm Environmental data collection and automatic irrigation system

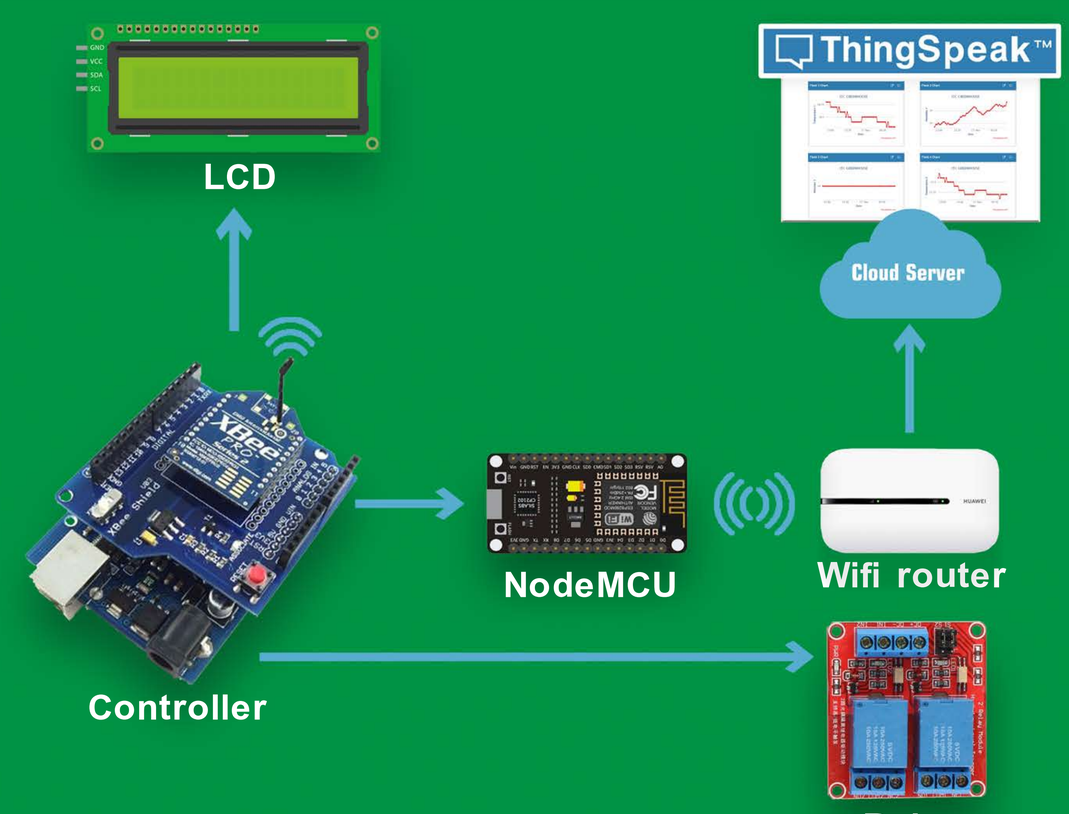
INTRODUCTION

The Smart Irrigation System is an IoT based device which is capable of automating the irrigation process by analyzing the moisture of soil and the climate condition. Water supply for irrigation can be managed easily by analyzing the condition of Soil moisture sensors smartly measure the soil moisture and based on that data, field is get irrigated and shut off automatically. The data are accessible to the farmers at distance on the mobile in a cloud platform.



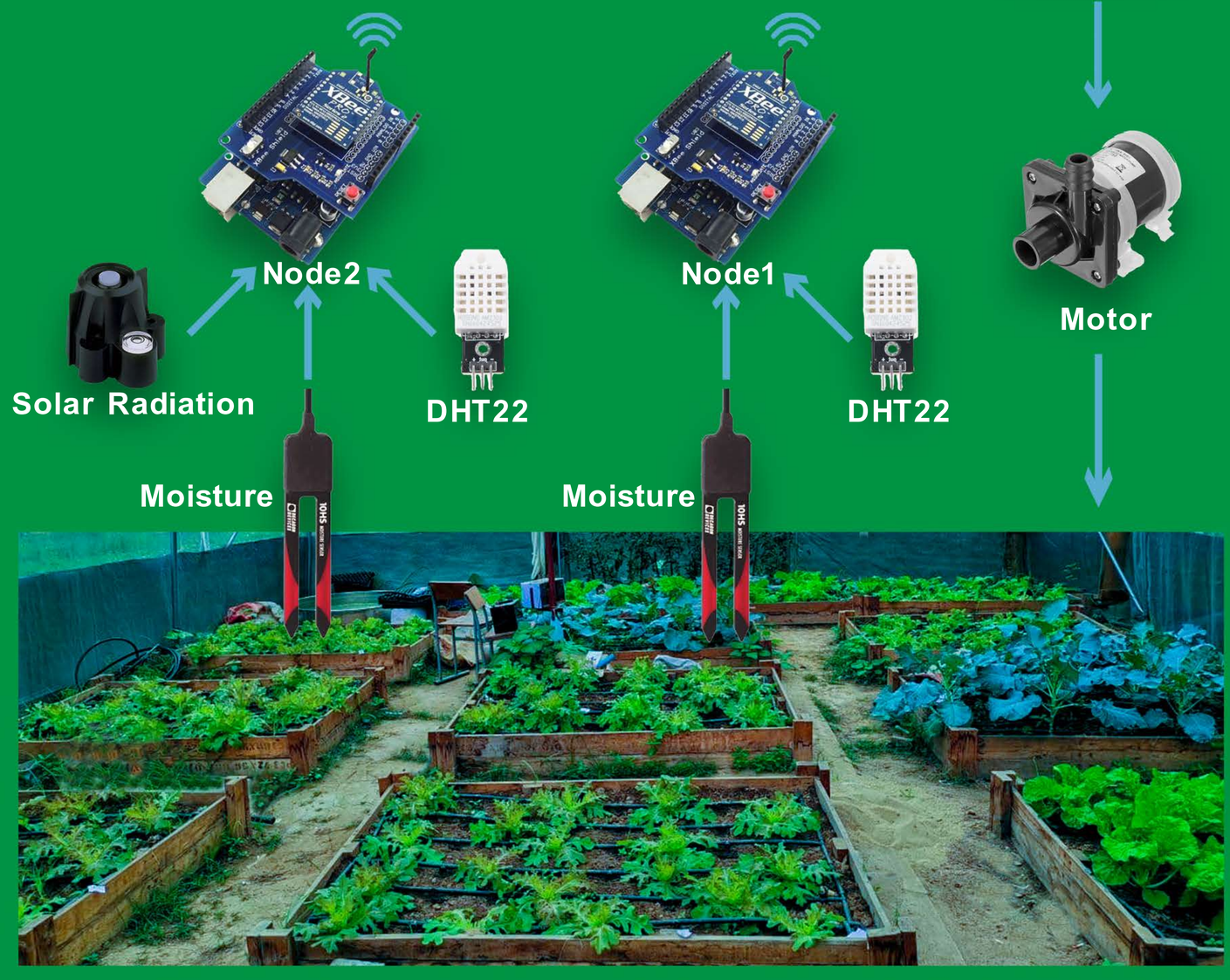
OBJECTIVE

This project has carried out a development the Automatic irrigation system and farm environment data collection system using wireless sensor network in farm. The system installed with many sensor nodes in the farm location to detect information such as temperature, humidity, soil moisture, solar radiation then sends the controller by communicated with ZigBee. Automatic irrigation, depending on soil moisture level or when the soil is dry, the controller controls the pump motor. We have two sensor nodes to capture the soil moisture to a certain extent so that the irrigation system automatically irrigates, it also shuts off automatically. On the data collection, the sensor nodes working in farm will send data to the controller and the controller communicated with NodeMCU for send to cloud platform (ThingSpeak) via the internet.



ARCHITECTURE

The connections with Controller are LCD, Relay, Motor, NodeMCU and ZigBee. ZigBee of the Controller communicated with ZigBee of nodes 1&2 for collecting data via wireless. NodeMCU communicated with wifi router for sending data to cloud platform. The connections with Node1 are sersors DHT22 and Soil moisture. For Node2 are Sersors DHT22, Soil moisture and Solar radiation.



APPLICATION

This approach is for the advancement of irrigation process by automatic method related to the field and thus improves irrigation. This type of system is often used for general plant care as part of the care of vegetable crops in small and large farms.

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GITHUB : https://github.com/Chanthan89/Smart-Irrigation/tree/master/ITC_AUTO_IRIGATION/S.Node-Coord-NodeMCU-Thinkspeak-27-10-20