WIRELESS SENSOR NETWORKS BASED-INTERNET OF THING FOR AGRO-CLIMATIC PARAMETERS MONITORING AND REAL-TIME DATA ACQUISITION

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ABSTRACT

The recent advent of internet of things technology with incorporating wireless sensor devices for supervisory, monitoring and security application has necessitated further development of embedded technology, of course, ability to monitor environmental conditions of greenhouse, gardens and farmland is crucial to research for effective seed germination, rapid plant growth and maximizing food production, which is due to some effect ranging from climate variability, soil information and irrigation periods. This paper proposes a real-time data acquisition and monitoring system for effectively monitoring changed in agricultural and environmental parameters using (IEEE 802.11 b/g/n) Wi-Fi, wireless sensor system and Android Web Apps. It is more important and concerned in this research to proffer long way solution to the farmers, agronomist, meteorologist and others based on weather stations, climatic changes and soil conditions. The developed smart agro-climatic parameter monitoring system consists of ATmega2560 controller based measuring units which collects the value of wireless sensor nodes like temperature, humidity, soil moisture and soil pH. These units send their data to the base station (BS), where data are collected and delivered through wireless module to the cloud database using HTTP POST where incoming data are stored. With android Web application, will permit users to view and download a real-time agro-climatic parameters on the dashboard using HTTP GET.

Contribution/ Originality: This article contributes to the work of Agajo, et al. 2015, by adopting low power consumption Wi-Fi technology and web apps. The formula are original from authors which helps in the development of standard IoTs architecture as the primary contribution with soil pH information's and web apps development.

1. INTRODUCTION

Agricultural plants growths and development are highly dependent on seasonal irrigation and fertilizing systems in order to produce large quantity of crops and farm products which are determine or affected by the climatic factors and soil texture [1] such as temperature, humidity, light intensity, soil moisture etc. The effect and importance of climatic changes on the physiological environments and agricultural farm crop is obvious which required regular monitoring for the management of farm production. Naturally, various plant species can grow,