Development of an IoT Based Data Acquisition and Automatic Irrigation System for Precision Agriculture

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Abstract:

Agriculture has benefited greatly from improvements in Internet of Things based technology. Farm data can be sent to farmers in real-time through the advent of Internet of Things based technology which integrates data collection, transmission, storage and other essential components that provide for great user experience. This work involves the development of a system that enable the transmission of sensor field data to the Internet, via a microcontroller, a transceiver and a Wi-Fi module. In this work, an Internet of Things based data acquisition and automatic irrigation system for precision agriculture was designed and implemented using Arduino Uno, Soil Moisture and Temperature sensors, Proteus design suite, and the Arduino integrated development environment software. The significance of this work is evident as it, enables farmers perform specified functionalities at

the comfort of their home, minimize wastage of water during irrigation and most importantly reduce the maintainability cost of the farm through minimal physical supervision. This work also elicits requirements for better improvements on the IoT-based data acquisition and automatic irrigation system.

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I. Introduction

The Internet of Things (IoT) has emerged as a megatrend for next-generation technology with far-reaching implications: advanced networking of end machines, devices, and services. Smart health care, smart cities, defense, shopping, traffic congestion, industrial control, and agriculture are only a few of the applications where IoT can help [1]. There have been a lot of research on IoT technology in the agricultural field to improve smart farming solutions [2]. We can gather data from sensing instruments and send it to the main servers thanks to efforts made on wireless sensor networks [3].

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