SMART IRRIGATION MANAGEMENT AND MONITORING SYSTEM USING IOT AND FUZZY LOGIC FOR AGRICULTURE LANDS

P.M.I.U. Aththanayaka*, K.G.S.N. Samaraweera and M.M. Mohamed Mufassirin

Department of Mathematical Sciences, Faculty of Applied Sciences, South Eastern University of Sri Lanka, Sammanthurai.
*Corresponding Author Email: *imesh.udaya@gmail.com*

The Internet of things (IoT) is a novel technique that enables the integration of internet connectivity into physical devices and common objects. One of the important applications of this technology is smart farming and cultivation. Sri Lanka is a tropical fertile land with the potential for the cultivation of a variety of crops. Agricultural sector contributes about 7% to the national GDP and over 25% Sri Lankans are employed in agricultural sector. However, as water supplies become scarce and polluted, there is an urgent need to irrigate more efficiently, in order to optimize water usage for agricultural needs. IoT based Intelligent Smart Watering System (SWS) is presented in this paper, that is assisted with an android application for monitoring smart consumption of water in small and medium scale gardens and fields. The proposed system relies on a set of accessible and economical sensors that capture real time data of plants and environment conditions. Once the data is collected from the sensors, a Wi-Fi module has been used to establish a communication link between the farm and the server. The proposed smart system can utilize live weather forecast reports to enhance the system's capabilities. Based upon the weather data and sensor data, watering the plants can be delayed if there is rain prediction in the immediate days. The proposed SWS processes the data to decide about the watering schedule using fuzzy logic approach, which helps in taking smart decisions with respect to watering requirements. The proposed model of the research was tested in a simulated agricultural environment and proved to be accurate in all types of weather conditions. It is believed that the suggested study can improve the productivity and efficiency of the irrigation process in agriculture.

Keywords: *Internet of things, Smart Agriculture, Watering System, Fuzzy Logic, Weather Report*