

## IoT-Based Plant Irrigation Application with Mobile Control

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**Abstract** – In contemporary times, the utilization of advanced technological devices designed to enhance the quality of life has garnered significant attention. Internet of Things (IoT) technology has played a pivotal role in fostering smart communication ecosystems where devices interact seamlessly. IoT extends beyond traditional computers, encompassing a wide array of smart devices interconnected through the internet. This interconnected web processes substantial volumes of sensor data derived from physical environments, converting it into meaningful information. This information is then transmitted to operators or relevant parties, enabling various activities to be performed by the systems.

One notable application of IoT is the implementation of automatic irrigation systems for plants, which is aimed at promoting healthy plant growth and beautifying the environment. These systems not only enhance practicality by reducing time and effort but also contribute to the efficient use of water resources. They are especially beneficial in water-scarce regions, as they lead to water conservation.

This study focuses on the development of a remote control and monitoring system using Arduino IDE, Firebase, and MitAPP. Key components such as the Esp8266 Wifi module, submersible pump, L9110 Dual Motor driver, and soil moisture sensor are integrated. The MitAPP Inventor is employed to convert the application into an Android-based platform, establishing seamless communication with the Firebase database. Consequently, real-time plant moisture measurements can be displayed, and manual or automatic watering can be initiated at any given time. The successful execution of this project ensures that plants receive the appropriate amount of water required for their growth, thereby promoting their health. The utilization of the technologies and components in this study aligns with the overarching goal of fostering optimal plant development.

**Keywords** – Internet of Things(IoT), Computer and Communication Networks, Computer Software, NodeMCU, FireBase, MitAPP.