Multiple Inputs Based Intelligent Irrigation System

KEY INFORMATION

TECHNOLOGY CATEGORY:
Environment, Clean Air & Water - Sensor, Network, Monitoring & Quality Control Systems
Green Building - Sensor, Network, Building Control & Optimisation
Infocomm - Wireless Technology

TECHNOLOGY READINESS LEVEL (TRL): TRL9
COUNTRY: SINGAPORE
ID NUMBER: TO175003

OVERVIEW

Developed a cutting-edge IoT-based Irrigation System, uses proprietary algorithms and a suite of integrated hardware to intelligently optimize watering schedules based on various inputs like soil moisture levels, raining status, weather forecasts, plant species, and soil moisture needs. This smart irrigation system has been built to address the common issue of water waste and poor irrigation management in agriculture, horticulture, and landscaping sectors. Potential users for this technology are large-scale farmers, landscapers, gardening centres, municipalities managing public parks, and property management company seeking smart community solutions. This innovation aims to revolutionize irrigation management by providing an efficient, data-driven irrigation system that not only optimizes watering for different plant species but also significantly reduces water consumption and system maintenance needs.

TECHNOLOGY FEATURES & SPECIFICATIONS

The system is composed of an array of IoT devices such as soil moisture sensors, rain sensors, water valves, and a cloud-based intelligent algorithm platform. It leverages the LoRaWAN wireless communication technology for reliable, long-range data transfer. Current State-of-the-Art solution is timer based, watering at fixed schedule, this leads to water wastage when watering continues even if the plant is hydrated. The unique multiple input-based (Eg. Soil moisture level, weather condition etc) intelligent algorithm developed is the core technology that facilitates optimal watering, to water only when the plant is in need of water. This can reduce the water consumption significantly. This system can be monitored and controlled via a user-friendly web portal, making remote management of irrigation systems possible. Additionally, the system only needs to carry out minimal number of devices/installation. The ideal collaboration partners would be IoT device manufacturers, cloud service providers, agritech companies, landscape companies and property developers.

POTENTIAL APPLICATIONS

This IoT-based Irrigation System finds its use in several industries like agriculture, horticulture, landscaping, and smart community management. The technology can be deployed in large farms, public parks, golf courses, residential gardens, and greenhouses. The system forms the basis for smart products like automated sprinkler systems, drip irrigation systems, and advanced home gardening solutions.

MARKET TRENDS & OPPORTUNITIES

The global smart irrigation market is huge, driven by the rising need for efficient watering systems and growing concerns about water conservation. This technology, with its intelligent algorithm for optimal watering and water-saving capacity, has great potential to capture a significant share of this fast-developing market.

UNIQUE VALUE PROPOSITION

This IoT-based Irrigation System stands apart from the current "State-of-the-Art" due to its unique, multiple input-based intelligent algorithm, enabling optimal watering based on various critical parameters, unlike traditional systems. It seamlessly integrates with LoRaWAN technology for efficient long-range communication. Its value proposition lies in its ability to significantly reduce water consumption due to minimal watering while keeping the plant healthy, installation cost and maintenance needs due to the minimal number of devices/installation required, making it a cost-effective, environment-friendly, and efficient solution in the area of irrigation management.