Really Autonomous Irrigation Network

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In response to Sri Lanka's food crisis, home and school gardening emerged as a widespread initiative. However, regularly watering these gardens remains a significant challenge due to busy lifestyles and unavailability during vacations. Existing solutions, such as soil moisture meters and sprinkler controllers, lack interconnectivity and self-sustainability. Even more expensive smart solutions struggle with unreliable connectivity, as many home gardens have poor Wi-Fi coverage. Moreover, most are neither weather-adaptive nor failsafe. RAIN is an IoT-based solution designed to address this challenge. It collects soil moisture data and compares them against a threshold but refrains from watering solely based on falling moisture levels. Instead, it adjusts watering schedule using real-time weather forecasts, saving precious water resources. RAIN also facilitates users to monitor their gardens, configure settings, and even perform manual watering through its mobile app. This autonomous, radio-linked, weather-adaptive, and water-saving smart solution integrates solar power, self-learning algorithms, and failsafe mechanisms, ensuring reliable operation. To evaluate its effectiveness, two identical plant beds were watered separately, one using a timer-based sprinkler controller and the other autonomously by RAIN. Water usage was recorded over three months, and water savings were computed. RAIN achieved remarkable water savings of up to 71% during the rainiest month and a minimum of 39% during the driest month, with an average saving of 56%. The plant bed watered by RAIN appeared healthier and greener than the others. Beyond this achievement, RAIN presents a promising business opportunity, with a low unit cost and a meaningful contribution to the society.

Awards Won: