

Smart Irrigation System using IOT

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Abstract: *The Internet of Things (IoT) has revolutionized traditional agricultural practices by introducing intelligent and automated systems for resource management. This paper proposes a Smart Irrigation System that leverages IoT technology to monitor and control irrigation processes efficiently. The system is composed of multiple sensors including soil moisture, temperature, humidity, and ultrasonic water level sensors, integrated with a NodeMCU microcontroller. These sensors collect real-time environmental data which is transmitted to a cloud-based platform for storage, analysis, and predictive decision-making. The system incorporates solar energy as a sustainable power source, enabling deployment in remote and off-grid areas. Irrigation is automatically controlled through actuators and relay modules, which respond to sensor data, ensuring water is delivered only when needed, thus preventing over-irrigation or under-irrigation.*

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