

ABSTRACT

Traditional plant care methods rely on manual monitoring of soil moisture, temperature, humidity, sunlight, and pH levels—a time-consuming process prone to human error that often results in inconsistent growing conditions. Without continuous oversight, plants frequently suffer from improper watering, environmental stress, and nutrient imbalances, leading to poor health outcomes and potential plant loss, especially for individuals with limited time or horticultural experience. The IOT-Based Smart Plant Care System revolutionizes this approach through automated, sensor-driven monitoring that maintains optimal growing conditions without constant human intervention. By continuously tracking environmental parameters and automatically adjusting watering schedules based on actual soil conditions, the system prevents both under watering and overwatering while utilizing AI to analyse data patterns, detect abnormalities, and alert users when intervention is needed. This technology not only improves plant health and growth rates but also enhances resource efficiency, reduces maintenance time, and makes successful plant cultivation accessible to everyone regardless of experience level, transforming plant care from a reactive, manual process to a proactive, data-driven science.