

# **IoT-Based Smart Irrigation System Presentation**





**Title:** IoT-Based Smart Irrigation System

**Subtitle:** Automating Plant Watering for Efficiency and Sustainability

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## • **Introduction**

What is an IoT-Based Smart Irrigation System?

- Uses smart sensors and actuators to automate watering.
- Reduces water wastage and optimizes plant care.



# System Components

- **Sensors:** Soil Moisture Sensor, Temperature Sensor (DHT11/DHT22)
- **Microcontroller:** ESP32 (Processes data and controls system)
- **Actuators:** Relay Module, Servo Motor (Controls water flow)
- **Water Pump & Valve:** Supplies water as needed
- **Wi-Fi & Blynk App:** Enables remote monitoring and control

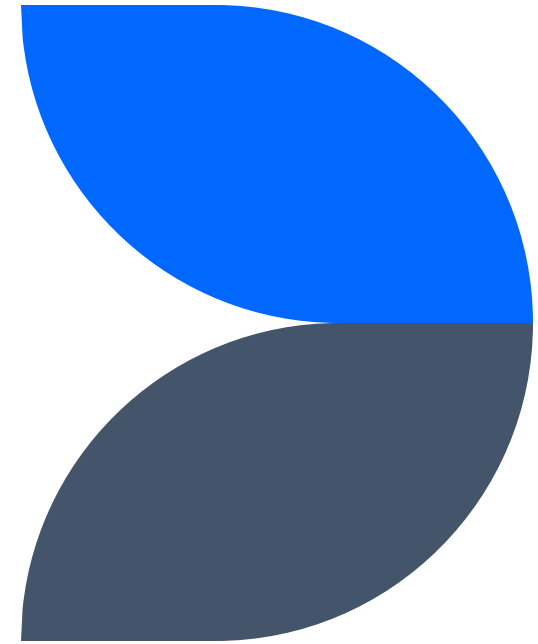


# Data Collection

- **Soil Moisture Sensor:**
  - Measures soil moisture in real time.
  - Determines if the soil is dry or moist.
- **Temperature Sensor (DHT11/DHT22):**
  - Measures ambient temperature.
  - Helps in assessing environmental conditions.

# Data Processing & Decision Making

- **Microcontroller (ESP32) Processes Data:**
- Collects sensor readings.
- Decides irrigation needs based on moisture & temperature levels.
- **Automated Actions:**
- If soil is dry → Activates water pump & opens valve.
- If soil is moist → Deactivates pump & closes valve.
- If high temperature → May extend watering duration.



# Remote Monitoring & Control

- **Blynk App Integration:**
- Displays real-time soil moisture & temperature data.
- Allows users to manually control the pump and valve.
- Provides remote access and automation.

# Automation and Efficiency

## **1. Reduces Water Wastage:**

- a. Watering only when necessary.

## **2. Energy Efficient:**

- a. Optimized pump usage.

## **3. User Convenience:**

- a. Fully automated with minimal manual intervention.



# Alerts and Notifications

- **Blynk App Sends Alerts for:**
- Critically low soil moisture requiring attention.
- Sensor or water pump malfunctions.
- **Ensures System Reliability & Timely Response.**

# Advantages of the System

- **Water Conservation:** Prevents overwatering.
- **Remote Accessibility:** Monitor & control from anywhere.
- **Automation:** No need for manual intervention.
- **Scalability:** Can expand to multiple zones or larger areas.



# Summary & Conclusion

- **Continuous Monitoring & Automated Irrigation**
- **Optimized Water Usage & Sustainability**
- **Remote Access for Better Control**
- **Smart & Efficient Solution for Agriculture & Gardening**