IoT Based Soil Moisture Monitoring System for Indoor Plants

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Abstract : The IoT-based soil moisture monitoring system for indoor plants is designed to address the challenges of maintaining optimal moisture levels in soil for plant growth and health. The system utilizes sensor technology to collect real-time data on soil moisture levels, which is then processed and analyzed using machine learning algorithms. This allows for accurate and timely monitoring of soil moisture levels, ensuring plants receive the appropriate amount of water to thrive. The main objectives of the system are twofold: to keep plants fresh and healthy by preventing water deficiency and to provide users with comprehensive insights into the water content of the soil on a daily and hourly basis. By monitoring soil moisture levels, users can identify patterns and trends in water consumption, allowing for more informed decision-making regarding watering schedules and plant care. The scope of the system extends to the agriculture industry, where it can be utilized to minimize the efforts required by farmers to monitor soil moisture levels manually. By automating the process of soil moisture monitoring, farmers can optimize water usage, improve crop yields, and reduce the risk of plant diseases associated with over or under-watering. Key technologies employed in the system include the Capacitive Soil Moisture Sensor V1.2 for accurate soil moisture measurement, the Node MCU ESP8266-12E Board for data transmission and communication, and the Arduino framework for programming and development. Additionally, machine learning algorithms are utilized to analyze the collected data and provide actionable insights. Cloud storage is utilized to store and manage the data collected from multiple sensors, allowing for easy access and retrieval of information. Overall, the IoT-based soil moisture monitoring system offers a scalable and efficient solution for indoor plant care, with potential applications in agriculture and beyond. By harnessing the power of IoT and machine learning, the system empowers users to make informed decisions about plant watering, leading to healthier and more vibrant indoor environments.

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