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AI-Based Environmental Monitoring System with Farm Automation

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Abstract: *This project presents an innovative approach to environmental monitoring in agricultural settings using AI-based solutions integrated with IoT technology. The system leverages data collected from various sensors such as soil moisture, gas sensors, and other environmental indicators to monitor the conditions in real-time. By utilizing an Arduino microcontroller, ESP module, and ThingSpeak server, the project is able to capture, store, and transmit sensor data effectively. The highlight of the project is the AI-based weather prediction module implemented using a Convolutional Neural Network (CNN) in Python, providing critical insights into weather conditions and allowing for data-driven decision-making. The system also includes a user-friendly web interface to display real-time monitoring and predictions, enabling farmers to better manage their resources and plan ahead for changes in environmental conditions.*

Keywords: AI (Artificial Intelligence),Cloud Computing (ThingSpeak),Environmental Monitoring, IoT (Internet of Things), Predictive Analytics, Smart Agriculture