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Optimization of Water Resource Management in Smart Agriculture Using Neural Network Algorithms

Narcisa Zlatan, Lima Hongou, Sofia Arkhstan

1. Polytechnic University of Bucharest, Management Technology department, Romania
2. Faculty of Engineering, Computer Technology, UCSI University, Kuala Lumpur 56000, Malaysia
3. Department of Computer System, South Ural State University, 454080 Chelyabinsk, Russia

Abstract:

Efficient water resource management is critical for ensuring sustainability in modern agriculture, particularly within the context of smart farming systems. This study explores the application of neural network algorithms for optimizing irrigation practices and water usage in smart agriculture. By integrating Internet of Things (IoT) devices with machine learning frameworks, particularly neural networks, the system can monitor environmental parameters—such as soil moisture, temperature, and humidity—in real time. The neural models analyze these inputs to predict optimal irrigation schedules and quantities, reducing water waste while maintaining crop health. Case studies in potato farming demonstrate the effectiveness of this approach in enhancing water-use efficiency and promoting sustainable agricultural practices.

Keywords:

Smart agriculture, water resource management, neural networks, IoT, irrigation optimization, sustainable farming.

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