

A Novel Design Approach towards Next-Generation Smart Irrigation System for Agricultural Enhancement

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Abstract: *Smart irrigation systems represent a transformative solution to enhance agricultural sustainability and productivity. By integrating advanced sensor technology, artificial intelligence, and IoT connectivity, these systems optimize water usage, adapt to changing environmental conditions, and minimize resource wastage. This paper explores the current state of smart irrigation technology, highlighting its potential to revolutionize farming practices. Additionally, future research directions and opportunities for further innovation are discussed, emphasizing the role of smart irrigation in promoting sustainability and resilience in agriculture. As technology continues to evolve, the adoption of smart irrigation systems offers promising prospects for improving efficiency and ensuring food security in the face of environmental challenges.*

Keywords: Smart irrigation systems, agriculture, sustainability, water efficiency, crop yield, sensor technology, artificial intelligence, IoT connectivity, environmental impact, resilience, innovation

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