Book Title (ID 2024_12)

Next-Generation Smart Farming: AI Applications and Technological Advancements

About the Book

The book delves into the transformative potential of advanced technologies in modern agriculture, focusing on precision farming, artificial intelligence (AI), drones and smart farming systems. The book explores how AI-driven analytics and machine learning models are revolutionizing decision-making processes, enabling farmers to optimize crop yields and resource use. It examines the integration of big data analytics to analyze vast amounts of agricultural data, providing actionable insights for better farm management. The role of drones in monitoring crop health, assessing field conditions and applying treatments with pinpoint accuracy is thoroughly discussed, highlighting their contribution to enhanced productivity and sustainability. The book also addresses the implementation of Internet of Things (IoT) devices in agriculture, which facilitate real-time monitoring and control of various farming operations, from soil moisture levels to livestock health. Innovative irrigation management techniques enabled by smart sensors and AI algorithms are presented, showcasing their impact on water conservation and efficient use of resources. Emphasizing climate resilience, the book explores strategies to adapt farming practices to changing climatic conditions through predictive analytics and smart technologies. Additionally, it covers the integration of AI and IoT for comprehensive crop health monitoring, allowing early detection of diseases and pests and timely interventions. By combining theoretical insights with practical applications, "Next-Generation Smart Farming" serves as an essential resource for researchers, practitioners and policymakers aiming to harness the power of technology to drive the future of sustainable and resilient agriculture.

Chapters outlines but not limited to:

Chapter 1: Transforming Agriculture with AI: An Introduction

Chapter 2: Innovative Farming Practices for the 21st Century

Chapter 3: Recent Breakthroughs in Smart Agriculture Technologies

Chapter 4: Harnessing AI for Sustainable Agricultural Development

Chapter 5: Precision Farming: Remote Sensing Techniques and Tools

Chapter 6: Geospatial Technologies: Mapping the Future of Agriculture

Chapter 7: Water Management Revolution: AI and Remote Sensing Synergy

Chapter 8: Advanced Strategies for Intensified Agriculture

Chapter 9: Predicting Crop Yields: AI and Machine Learning Approaches

Chapter 10: Remote Sensing Innovations for Smart Farming

Chapter 11: Agricultural Technology Disruption: AI's Role

Chapter 12: Building Climate-Resilient Agricultural Systems

Chapter 13: Big Data in Agriculture: Enhancing Weather Forecast Accuracy

Chapter 14: Smart Crop Monitoring Systems: Integrating AI and IoT

Chapter 15: Internet of Things in Agriculture: A New Era of Farming

Chapter 16: Optimizing Soil Moisture and Temperature with AI Solutions

Chapter 17: UAVs in Agriculture: Precision from Above

Chapter 18: Innovative Smart Irrigation Techniques for Water Efficiency

Chapter 19: Managing Biotic Stresses in Crops with Smart Technologies

Chapter 20: Soilless Cultivation: AI-Powered Techniques and Benefits

Chapter 21: Nutrient Management with Smart Farming Technologies

Chapter 22: AI and IoT Integration in Modern Soilless Farming

Chapter 23: Early Detection of Plant Diseases with AI Technologies

Chapter 24: Pest Control Innovations: AI-Driven Solutions

**Note: Chapter title may be modified or new chapter may also be proposed by the author.

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