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Vehicle: An Emerging Trend in Precision Farming -- Smart irrigation management through Unmanned Aerial Vehicles (UAV) -- Biotic stress management in field crops using artificial intelligence technologies -- Soilless cultivation: A distinct vision for sustainable agriculture -- Fertigation management in substrate soilless culture -- Integration of AI and IoT in Soilless Cultivation to power sustainable agricultural revolution -- Plant disease detection, diagnosis and management: Recent advances and future perspectives -- Disease and pest control through advance technology -- A Critical Analysis of Convolutional Neural Networks for Leaf Disease Detection in Plants -- Robotic seeding or sowing system in smart agriculture -- Revolutionizing Crop Yield Prediction: The Synergy of Remote Sensing and Artificial Intelligence Technologies -- Harvesting the Future: Navigating the Challenges and Limitations of AI in Agriculture. .

Sommario/riassunto

As technology continues to saturate modern society, agriculture has started to adopt digital computing and data-driven innovations. This emergence of “smart” farming has led to various advancements in the field, including autonomous equipment and the collection of climate, livestock, and plant data. As connectivity and data management continue to revolutionize the farming industry, empirical research is required to understand these technological developments. This book explores the applications of various artificial intelligence techniques by identifying and describing technical, functional, and non-functional future technologies for smart farming and agriculture. The book also presents practical application opportunities for the resolution of real-world problems, including contributions from precision irrigation, greenhouse data, livestock monitoring, automation, IoT ecosystems for agriculture, cloud computing, mobile robots for precision agriculture, remote sensing applications, and data mining. In addition, this book provides summary information about different soilless techniques such as hydroponics, aeroponics, and aquaponics, among others. This book is ideally designed for farmers, agriculturalists, product managers, farm holders, manufacturers, equipment suppliers, industrialists, governmental professionals, researchers, academicians, and students seeking current research on technological applications within agriculture and farming.