1. Record Nr. UNINA9911007364703321

Titolo	Artificial Intelligence in Microbial Research : Bridging the Gap / / edited by Babita Pandey, Devendra Pandey, Aditya Khamparia, Venkatesh Dutta, Valentina E. Balas
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2025
ISBN	981-9634-48-2
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (XVI, 450 p. 104 illus., 94 illus. in color.)
Collana	Microorganisms for Sustainability, , 2512-1898 ; ; 45
Disciplina	579.1788
Soggetti	Microbial populations Microbiology Cytology Microbial ecology Artificial intelligence Machine learning Artificial intelligence - Data processing Microbial Communities Cellular Microbiology Environmental Microbiology Artificial Intelligence Machine Learning Data Science
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Thematic Analysis of Media Influence on the Adoption of AI Climate Prediction Models in Microbial Agriculture Practices: A Case Study of Uttar Pradesh Using Diffusion of Innovations Theory -- Chapter 2. Understanding Media Influence on the Adoption of AI Climate Prediction Models in Microbiological Agricultural Practices: A Study of Uttarakhand -- Chapter 3. Advancements in Precision Agriculture: Integrating Machine Learning Techniques for Crop Monitoring and Management -- Chapter 4. Advances in Agricultural Analytics Machine Learning Applications for Crop Monitoring and

Management -- Chapter 5. AI Driven Strategies for Microbial Infection from Discovery to Therapeutic Design -- Chapter 6. Use of Artificial Intelligence for Monitoring Algal Blooms in Aquatic Ecosystem -- Chapter 7. Ai-Yolact Model for Automatic Severity Grading Of Microbial Based Anthracnose Infection in Camellia Leaves -- Chapter 8. An Explainable AI Based CNN model for Plant Disease Diagnosis -- Chapter 9. Artificial Intelligent Enable Intelligent Bio-Sensor for Microbial Analysisfor Lung Health -- Chapter 10. Biosensors Guided Ai Interventions in Personalized Medicines -- Chapter 11. Education and Training for Developing Responsible AI Solutions in Healthcare -- Chapter 12. Automation of Drug Discovery & Development -- Chapter 13. Genome Studies and Disease Diagnosis -- Chapter 14. Exploring Explainable Artificial Intelligence in Healthcare: Issues, Challenges and Opportunities -- Chapter 15. Investigating Integron as the Principal Factor of Antibiotic Resistance in the Human Gut: A Holistic Perspective -- Chapter 16. Hybrid Deep Learning for Predictive Modelling of Microbial Biostimulants in Precision Agriculture -- Chapter 17. Challenges and Opportunities In Integrating Generative Al With Wearable Devices -- Chapter 18. Medical Image Analysis and Morphology Using Artificial Intelligence -- Chapter 19. Simulation of Biological Structures Using Generative Artificial Intelligence -- Chapter 20. Neuromuscular Disease Classification: Leveraging Deep Learning Feature Extractors and Applications.

Sommario/riassunto

This book explores the convergence of microbiology and artificial intelligence (AI) and delves into the intricate world of microbial systems enhanced by cutting-edge AI technologies. The book begins by establishing a foundation in the fundamentals of microbial ecosystems and AI principles. It elucidates the integration of AI in microbial genomics, demonstrating how advanced algorithms analyze genomic data and contribute to genetic engineering. Bioinformatics and computational microbiology are explored, showcasing AI's role in predictive modeling and computational tools. The intersection of AI and microbial applications extends to drug discovery, precision agriculture, and pathogen detection. Readers gain insights into AI-driven drug development, the optimization of agricultural practices using microbial biostimulants, and early warning systems for crop diseases. The book highlights AI's role in microbial biotechnology, elucidating its impact on bioprocessing, fermentation, and other biotechnological applications. Climate-smart agriculture and microbial adaptations to environmental challenges are discussed, emphasizing sustainable practices. This book caters to a diverse audience including teachers, researchers, microbiologist, computer bioinformaticians, plant and environmental scientists. The book serves as additional reading material for undergraduate and graduate students of computer science, biomedical, agriculture, human science, forestry, ecology, soil science, and environmental sciences and policy makers to be a useful to read.