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Book Title

Agricultural Robotics for Outdoor and Indoor Crop Production

Publisher

CRC Press Taylor & Francis Group

Abstract Submission

30th September, 2025

CRC Press
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No Publication Fee

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Agricultural Robotics for Outdoor and Indoor Crop Production

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Sections

1 Key Technologies for Agri-Robots

- Perception, sensing, and autonomous navigation for agricultural settings
- Control methods: PID, MPC, and H∞ robust control
- AI and deep learning for detection, planning, and decision-making
- SLAM, path planning (A*, RRT), and localization techniques
- Simulation platforms, digital twins, and virtual environments
- ROS, embedded systems, and wireless communication (LoRa, CANBUS, 5G)

Image source: Adaptive AgroTech

2 Agricultural Robotics for Outdoor Crop Production

- Robust design for variable terrain, weather, and off-grid environments
- Adaptive navigation, slip control, and hybrid locomotion
- ML-based control of traction, obstacle handling, and field movement
- Autonomous tractors, smart implements, and crop-specific robots
- Precision sprayers, harvesters, and field-scouting systems
- Case applications: AgXeed, Naïo, and multi-purpose platforms

Image source: Adaptive AgroTech

3 Agricultural Robotics for Indoor Crop Production

- Robotics for greenhouses, vertical farms, and plant factories
- Navigation in tight spaces and dense crop layouts
- Vision-guided harvesting, soft grippers, and robotic manipulators
- SLAM and AI for real-time crop inspection and monitoring
- Automation of pollination, spraying, sanitation, and seedling tasks
- Integration with climate systems and hydroponic/aeroponic automation

Image source: Adaptive AgroTech

4 Integration, Impact, and Future Directions

- Integration with IoT, DSS, and cloud-based digital agriculture platforms
- Socio-economic impact, adoption challenges, and cost–benefit analysis
- Technology Readiness Levels (TRLs): from basic research to fully deployed systems
- Human–Robot Interaction (HRI) for collaborative farming and user-centered robotic design
- Regulatory, ethical, and labor considerations for agri-robotics
- Real-world case studies and technology deployment lessons
- Startups, policy, and public–private partnerships in scaling solutions
- Future trends: AR/VR interfaces, remote control, and robotics roadmaps

Image source: Adaptive AgroTech

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Abstract Submission

- ✔ Abstracts due: September 30, 2025
- ✔ Chapters due: December 30, 2025
- ✔ Authors are invited to submit an abstract of up to 500 words outlining the proposed chapter topic. Relevant images or figures may be included to support the concept.

Submit Your Abstract

Name:

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Author Guidelines

- ✔ Chapter length: 15–30 pages (excluding references)
- ✔ Each contributor must sign the Contributor Agreement form
- ✔ The publisher prefers all chapters to be submitted in Microsoft Word format
- ✔ Do not format your chapter—typesetting is handled by the publisher
- ✔ All artwork (figures, equations, tables) must be submitted as separate, labeled files
- ✔ Secure image permissions early and include all documentation with your final chapter
- ✔ AI-generated content is not permitted; authors must comply with the publisher's AI policy
- ✔ The abstract will not appear in print but will enhance online discoverability

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🔗 IEEE Technical Committee for Agricultural Robotics & Automation
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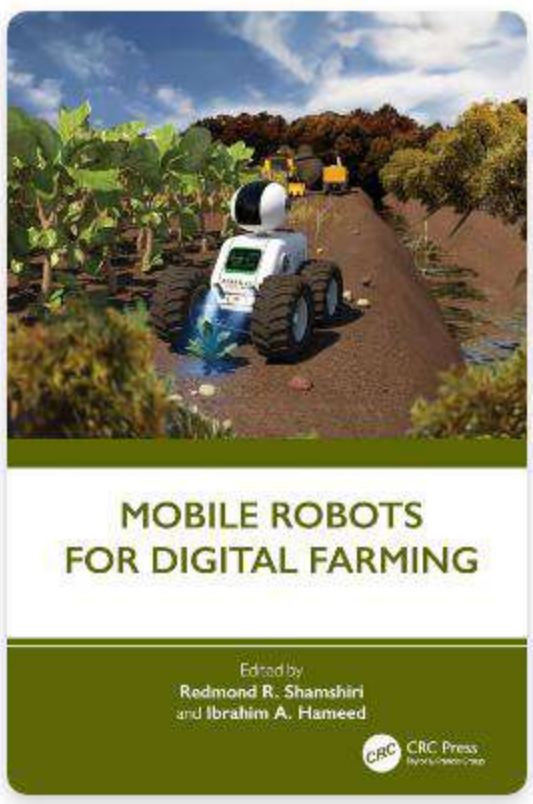
Previous Book Project



Title: *Mobile Robots for Digital Farming*

Edited By: Redmond R. Shamshiri, Ibrahim A. Hameed

DOI: 10.1201/9781003306283

Pages: 208 | **ISBN:** 9781032304663

Subjects: Computer Science, Engineering & Technology, Environment & Agriculture

📘 **Available at:** Amazon | Routledge | Taylor & Francis

This book provides a complete and comprehensive reference for agricultural mobile robots, covering all aspects of the design process—from sensing and perceiving to planning and acting for practical farming applications. *Mobile Robots for Digital Farming* explores topics such as Robot Operating Systems (ROS), dynamic simulation, artificial intelligence, image processing, and machine learning. It also features multiple case studies from funded projects and real-field trials. It is useful for professors, students, farmers, startups, companies, consultancy agencies, equipment suppliers, and policymakers in the agricultural domain.

- **Chapter 1:** *Sensors, Algorithms, and Software for Autonomous Navigation of Agricultural Mobile Robots*
- **Chapter 2:** *Robot-Assisted Soil Apparent Electrical Conductivity Measurements in Orchards*
- **Chapter 3:** *Electrical Tractors for Autonomous Farming*
- **Chapter 4:** *Agricultural Robotics to Revolutionize Farming, Requirements and Challenges*
- **Chapter 5:** *Toward Optimizing Path Tracking of Agricultural Mobile Robots with Different Steering Mechanisms*