Special Issue

Data-Driven Fields: AI and Unmanned Sensing Technologies in Agricultural Optimization

Message from the Guest Editors

This Special Issue invites cutting-edge research at the intersection of artificial intelligence and sensor technology to accelerate the transition to digital, precise, and intelligent agriculture. High-resolution remote sensing, combined with deep learning and emerging foundation/generative models, is reshaping how we scout fields, diagnose crop stress, guide variable-rate inputs, and forecast yield. We particularly welcome studies that reduce data-acquisition costs through synthetic data and domain adaptation, fuse multi-modal sources (satellite, UAV, robot in-situ/IoT, agronomic text), and operationalize real-time decision support for irrigation, fertilization, and pest/disease management. Contributions that integrate physical knowledge with data-driven models, e.g., digital twins of fields and greenhouse, are encouraged. Keywords

- digital agriculture
- crop phenotyping
- computer vision in agriculture
- drone
- sustainable agriculture
- sensors
- pests and diseases
- AI-generated content
- agricultural optimization

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