

Special Issue

Enhancing Generalization in Agricultural AI: Bridging Data Gaps and Boosting Model Robustness

Message from the Guest Editors

The goal of this Special Issue is to explore advanced strategies for improving the generalization capability of machine learning models in agriculture. This includes techniques such as data augmentation, domain adaptation, transfer learning, and multimodal data fusion, as well as the use of synthetic data, generative models (e.g., GANs, VAEs), and Large Language Models (LLMs) to overcome data limitations. The scope of this Special Issue covers diverse agricultural applications, including crop monitoring, soil and water management, pest and disease detection, and yield prediction. This Special Issue will highlight studies on innovative methods to enhance model generalization, such as leveraging diverse data sources, improving training pipelines, evaluating model robustness under real-world conditions, and developing adaptive models that maintain performance across varying environments and tasks. We are seeking original research articles, case studies, technical notes, and reviews that present novel approaches, practical applications, and insights into building more generalizable and resilient AI models for agriculture.

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