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.

Guest Editors

Dr. Jayme Garcia Arnal Barbedo

Pesquisador nas Áreas de Processamento Digital de Sinais e Imagens, Embrapa Informática Agropecuária, Empresa Brasileira de Pesquisa Agropecuária (Embrapa), Campinas, SP, Brazil

Dr. Mulham Fawakherji

Department of Computer Systems Technology, North Carolina Agricultural and Technical State University, Greensboro, NC, USA

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Agronomy
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
agronomy@mdpi.com

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Editor-in-Chief

Prof. Dr. Leslie A. Weston
Gulbali Centre for Agriculture, Water and Environment Research, Charles Sturt University, Wagga Wagga, NSW 2678, Australia

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