Special Issue

Digital Twin and AI-Enhanced Simulation in Agricultural Systems

Message from the Guest Editors

Digital twin creates dynamic virtual models of farmland, crops, and environments through high-precision modeling and real-time data synchronization via the Internet of Things (IoT), achieving high-fidelity interaction between the physical and information worlds. On the other hand, artificial intelligence techniques, including machine learning and computer vision, deeply mine multi-source heterogeneous data to empower simulation systems with autonomous learning and dynamic optimization, supporting applications such as crop water and fertilizer demand prediction, pest and disease early warning, and precision fertilization. This Special Issue explores digital twin and AI-enhanced simulation in agriculture, including multi-scale modeling of digital twins, multi-technology fusion, intelligent decision-making, and visualized simulation management. This Special Issue aims to promote precision, efficiency, and sustainability in agricultural production processes and facilitate the transition from traditional agriculture to smart agriculture.

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