

Special Issue

Integrated Navigation and Its Applications in Autonomous Agricultural Machinery

Message from the Guest Editors

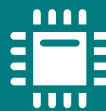
This Special Issue focuses on Integrated Navigation and Its Applications in Autonomous Agricultural Machinery, aiming to highlight the latest advancements, methodologies, and applications in this domain. Central to these advancements is a multi-sensor fusion approach that harnesses the complementary strengths of GNSS (specifically RTK) for centimeter-level absolute positioning accuracy; MEMS-IMU for stable motion sensing in dynamic environments; visual navigation for rich environmental perception and feature matching; and radar for robust detection under adverse weather or lighting conditions. Thereby, this integrated solution effectively addresses critical challenges including continuous positioning error accumulation in unstructured terrains, instantaneous interference from dynamic obstacles, attitude solution drift during complex maneuvers, and localization failures in feature-deprived environments. We invite contributions exploring algorithm optimization (e.g., adaptive Kalman filtering, deep learning-based error correction), hardware-software co-design, and real-world validation in autonomous tractors, harvesters, and drones.

Guest Editors

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Dr. Yongyun Zhu
Dr. Zhen Ma

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