Special Issue

Drone Autonomous Perception-Aware Path Planning for Survey and Inspection Missions

Message from the Guest Editors

The integration of advanced sensing technologies into unmanned aerial vehicles (UAVs) has transformed drones into powerful platforms for a wide range of applications across agriculture, construction, mining, and environmental monitoring. In survey and inspection operations, drones are increasingly relied upon for tasks such as crop and livestock monitoring, crop spraying, soil and field analysis, infrastructure inspections (e.g., power lines, pipelines, bridges), stockpile measurements, and environmental assessments, including forest monitoring and disaster response. Traditionally, these missions have been heavily dependent on human teleoperation, requiring skilled pilots to ensure the quality and relevance of the data collected. However, the full potential of onboard sensing technologies for enabling autonomy in such missions remains underexplored. The move toward perception-aware autonomy represents a significant leap forward in enhancing efficiency, safety, and scalability of drone operations.

Guest Editors

Dr. Samer Hanoun

Dr. Sui Yang Khoo

Prof. Dr. Chee Peng Lim

Prof. Dr. Khaled Eskaf

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

mdpi.com/journal/sensors

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Editor-in-Chief

Prof. Dr. Vittorio M. N. Passaro
Dipartimento di Ingegneria Elettrica e dell'Informazione (Department of Electrical and Information Engineering), Politecnico di Bari, Via Edoardo Orabona n. 4, 70125 Bari, Italy

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