AIVTS 2025

Forward

The First International Conference on AI-enabled Unmanned Autonomous Vehicles and Internet of Things for Critical Services (AIVTS 2025), held on October 26-30, 2025 in Barcelona, Spain, inaugurated a series of events focusing on advanced topics on integrating IoT, UAV and AI/ML and target solutions for dynamic and critical systems.

The rapid advances and widespread adoption of the Internet of Things (IoT) have promoted a revolution in communication and processing technology and offered a very large range of applications and services. Multi emerging directions in systems design and implementation are developed. IoT systems have advanced greatly in the past few years, becoming intelligent, especially with the support of Artificial Intelligence (AI) and Machine Learning (ML).

In parallel, Unmanned Autonomous Vehicles (UAVs) technology (aerial drones, terrestrial, underearth, and underwater), enabled new applications in various areas such as energy, agriculture, transportation, avionic, health, military, surveillance and monitoring, delivery, critical missions and others. Multi-UAVs solutions allowed systems to collaborate and complete missions more efficiently and economically. One particular UAV domain concerns both autonomy and automation, because of challenges of secure and reliable connectivity and privacy preservation. Integration of AI/ML in UAVs can lead to high growth in the field, by improving safety and efficiency. ML algorithms can enable UAVs to make real-time decisions in complex environments and reach the optimal solution, aiming to meet the mission requirements.

IoT-based UAV networks is a novel emerging field, that combines the UAV network dynamic capabilities with the IoT power. Such solutions can be powerful and highly effective for mission critical services. Cooperation with edge computing can bring additional power of UAV/IoT systems. However, using advanced technologies on sensing, edge computing, computing, and data processing and interpretation, while AI/ML-based, requires further research work of appropriate models, protocols, validation, and also considerations of human-centric global issues (climate, energy, pollution, battlefield, wellness). The advent of AI/ML-based approaches for guiding and orchestrating the interpretation of visual patterns, optimizing path, real-time multi-prong decisions and complex and dynamic systems, led to a powerful triad: AI-IoT-UAV.

This conference was very competitive in its selection process and very well perceived by the international community. As such, it attracted excellent contributions and active participation from all over the world. We were very pleased to receive a large amount of top quality contributions.

We take here the opportunity to warmly thank all the members of the AIVTS 2025 technical program committee as well as the numerous reviewers. The creation of such a broad and high quality conference program would not have been possible without their involvement. We also kindly thank all the authors that dedicated much of their time and efforts to contribute to the AIVTS 2025. We truly believe that thanks to all these efforts, the final conference program consists of top quality contributions.

This event could also not have been a reality without the support of many individuals, organizations and sponsors. We also gratefully thank the members of the AIVTS 2025 organizing committee for their help in handling the logistics and for their work that is making this professional meeting a success.

We hope the AIVTS 2025 was a successful international forum for the exchange of ideas and results between academia and industry and to promote further progress in UAV and IoT research. We

also hope that Barcelona provided a pleasant environment during the conference and everyone saved some time for exploring this beautiful city

AIVTS 2025 Steering Committee

Yasushi Kambayashi, Sanyo-Onoda City University, Japan
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