ICIRA 2024 Special Session Proposal

Title of the Proposal: Cognitive Intelligence and Security Control for Multi-domain Unmanned Vehicle Systems

Technical Outline of the Session and Topics:

With the fast development of various unmanned vehicle such as unmanned ground vehicles 、 unmanned aerial vehicles 、 unmanned surface vehicles and unmanned underwater vehicles, the cooperative operations of multi-domain unmanned vehicle systems have been a hot and interesting topic recently. This will bring an significant influence into all work of life. Especially, the basic theories and intelligent technologies for efficient and safe collaboration within the multi-domain unmanned vehicle systems are the challenging issues, where there are involving cooperative state sensing and recognition, collaboration and adversarial cognition, bionic or human-like swarm intelligent task or path planning, federated machine learning onboard multi-vehicles, security control and information game between the vehicles, health monitoring and management of unmanned vehicles systems.

Topics of the Session include but not limited to:

- *cooperative state sensing and recognition*
- *cooperative and adversarial cognition intelligece*
- *bionic or human-like swarm intelligent task or path planning*
- *federated machine learning onboard multi-vehicles*
- *security control and information game*
- *dynamic modelling and AI control for aerial robots*
- *self-states monitoring and self-management of aerial vehicle*
- *coordination of heterogeneous and homogeneous multi-agent systems*

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