Trusted AI-Enabled Shepherding of Human-Swarm Teams

Technology to enable trusted inter-operation between humans and swarms of autonomous systems and platforms. Shepherding is the ability to guide, influence or reshape a group of autonomous systems towards a goal with optimised efforts to the shepherd and the group.

Competitive advantage

- A unique fully-distributed human-swarm and swarm-on-swarm systems exist that can scale arbitrarily to any size with minimum complexity. This technology achieves this in a structured, verifiable, trustworthy and scalable manner
- Multidisciplinary team with the capacity and facilities to prototype concepts theoretically, through simulation and on real-platforms
- Novel architectures to enable efficient, low-CPU, and highly smart AI-enabled swarm systems

Impact

- Enable commanders to take responsibility of large (semi-) autonomous heterogeneous swarms in a trusted, verifiable, and accountable manner
- CPU and power efficient, highly smart AI-enabled swarm systems
- Autonomous real-time management of the human-swarm relationship
- Scalability of human-swarm logic
- Transparent, explainable, and adaptive swarm control-logic
- Trusted human-swarm operations

More Information

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Successful applications

- Autonomous coordination policies in ground-air unmanned systems interaction
- Autonomous learning, reasoning and decision-making in dynamic heterogeneous swarm environments
- Distributed contextual awareness for multi-agent systems and its application to military land vehicles

Capabilities and facilities

- Indoor Unmanned Aerial Vehicle (UAV) testing facilities
- High-fidelity simulation environments including air traffic management and modelling of uninhabited all-domains vehicles (UxVs)
- A variety of unmanned ground and air vehicles

Our partners

- Defence Science and Technology (DST)
- US Office of Naval Research
- US Air Force Office of Scientific Research
- US Army International Technology Center Pacific (ITC-PAC)