2023

The Impact of Intelligent Autonomous Systems (IAS) Integration on Human-IAS Teams and Their Effectiveness

Canan, Mustafa

Monterey, California: Naval Postgraduate School

The Impact of Intelligent Artificial Systems (IAS) Integration on Human-IAS Teams and Their Effectiveness

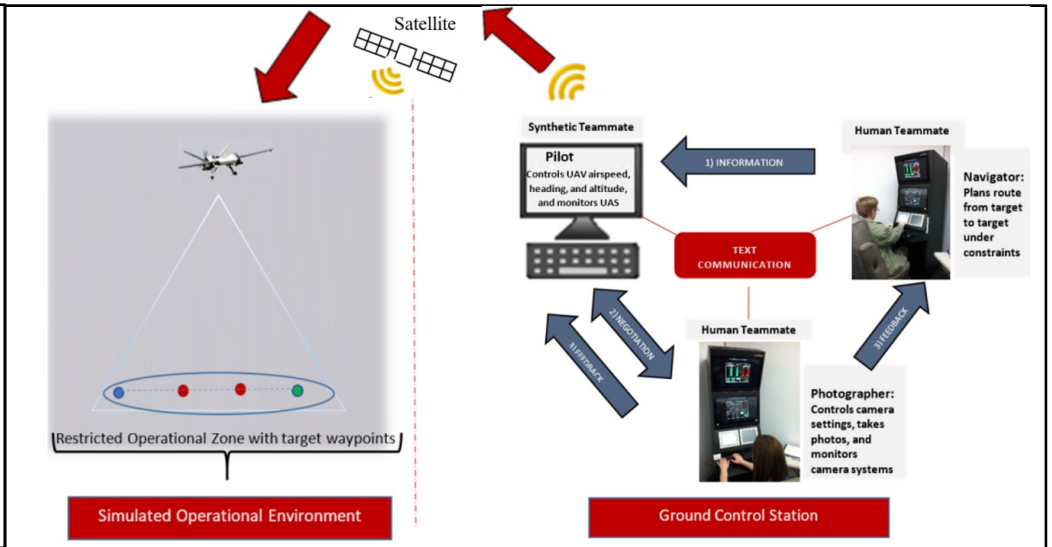
Drs. Mustafa Canan (PI) & Mustafa Demir (Co-PI)

Research Goal:

- Develop new real-time metrics to measure team interaction, trust evolution and performance IAS teams.
- Examine IAS and human-IAS team systems in remotely piloted aircraft system (RPAS) testbed

Objective:

- Test the predictions of coordination dynamics and trust of IAS during several novel events and formalize them as models
- Use the current simulated RPAS task work environment and test example scenarios for human-IAS team systems
- Conduct longitudinal experiments on human-IAS systems



Research Questions and Outcome

- What are the critical dynamic predictors of socio-cognitive behaviors that predict human-IAS teaming long-term coordination, trust, and performance?
- What are the design requirements for effective human-IAS team systems?
- The primary outcome is to produce and evaluate a model of human-IAS team coordination dynamics in order to identify the important team socio-cognitive processes, trust, performance, and design requirements.

Benefits of Proposed Technology:

- Measuring human-IAS team effectiveness via real-time metrics
- Assessing effectiveness of the IAS under novel conditions
- Evaluating the IAS with human teammates in the RPAS task
- Providing data from both all-human and human-IAS teams

Measures:

- Real-Time team performance: the # of successful photographs and spending the # of seconds for taken each photo
- Team physiological: Heart rate, eye tracking
- Cognitive processes: coordination, communication, trust, resilience, and team situation awareness

Proposed Funding: $150,000.00; **Period of Perf.:** 12-Month **Contact**: anthony.canan@nps.edu