

EPSRC CDT in Distributed Algorithms

PhD Project: Coordination and Cooperation in Adversarial Engagements (CCAЕ)

University of Liverpool

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Project Description

This project has been developed by the University of Liverpool and STFC's Hartree centre in partnership with MBDA.

This PhD will develop methods to provide tactical guidance and decision making for future air defence systems. The aim will be to provide assistance to an operator that is robust, timely and that optimises the defensive response across all available assets; including platforms/vehicles, countermeasures, and interceptors.

Existing air defence systems are often optimised to provide protection against individual adversaries. Future systems are likely to require a greater level of adaptability and to provide the same degree of protection against multiple adversaries in complex, time-critical engagements. The ability to adapt to changes in tactics in real-time is a challenging computational task, and it is further complicated by constraints on the available countermeasures and other resources.

The key challenges in this work are in reducing the latency of the tactical responses (improving computational speed) and providing an indication of the reasoning behind the tactical guidance. The interpretability of the system's outputs is critical to the understanding of the system and it is likely to be a major factor in the acceptance of such techniques. It will therefore require an appreciation of high-performance computing methods, and logical reasoning with incomplete data. The industrial, non-academic partner (MBDA) will help to define appropriate scenarios and will inform the choice of constraints and system capabilities.

Go to the [EPSRC CDT in Distributed Algorithms](#) website.