EPSRC CDT in Distributed Algorithms

PhD Project: Machine Learning of Behavioural Models for Improved Multi-Sensor Fusion

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Project Description

The project considers sensors such as radar, electro-optics, IR, maritime, GPS etc and sensor models characterizing error statistics of detections or raw measurements. There are models with different levels of fidelity that capture the characteristics of these sensors and their false alarm statistics. Motion models are essential components of sensor fusion algorithms. Common types of motion models used in tracking and detection are Constant motion/turn, Particle and Kalman filters as well Dynamic Bayesian networks or Neural network-based models. Further information may be utilized alongside sensor data such as Content Awareness incorporating contextual information, such as maps or prior knowledge, which can enhance the quality of fusion results. The overall aim is to design and analyse learning strategies for finding motion patterns and typical sensor error statistics from historical data, to improve the performance of fusion algorithms. Other topics may be explored such as design mechanisms for real-time adaptation of behavioural models to changing environmental conditions and unexpected events to enable proactive responses to adversarial tactics and dynamic military environments.

For more information please go to the EPSRC CDT In Distributed Algorithms website.