

EPSRC CDT in Distributed Algorithms

PhD Project: Drone Detect and Desist

University of Liverpool

PhD Student: Konstantinos Alexandridis

Project Partner: [Vision4ce](#)

University of Liverpool Supervisors:

[Dr Shan Luo](#)

[Dr Michael Bane](#)

Project Description

This project has been developed by the University of Liverpool and STFC's Hartree centre in partnership with Vision4ce.

The project is aimed at the development of accurate, robust methods for the detection and identification of drones (small uninhabited air vehicles, UAVs) in and around secure areas, such as airports and other sensitive sites. The PhD benefits from assistance from the industrial partner (Vision4ce) who are active in this market. Vision4ce are keen to develop energy efficient methods and hardware implementations for long duration monitoring and surveillance systems.

Traditional surveillance systems tend not to be optimised for energy efficiency and very long duration operations. With the development of new processor architectures – GPUs, FPGAs, and other energy efficient massively parallel systems, such as the Graphcore IPU – there are possible benefits associated with optimising the classification methods for these systems.

The key challenge is in maintaining a robust performance whilst providing very low power operation. It is also necessary to provide information regarding the possible danger associated with the drones in terms of their proximity to the secure area and their general behaviour (e.g. erratic manoeuvres or other unusual characteristics). Vision4ce is able to assist by providing real sensor data and advice on processor specific implementations of image processing and object tracking for practical applications.

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