

EPSRC CDT in Distributed Algorithms

PhD Project: Data-driven Intelligence for Countering Crime

University of Liverpool

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Project Description

This project has been developed by the University of Liverpool in partnership with [STFC Hartree](#) and NCA.

Organised crime is one of the greatest threats to the UK's national security. The role of the National Crime Agency (NCA) is to protect the public by disrupting and bringing to justice those serious and organised criminals who present the highest risk to the UK.

NCA officers do exist in each of the NCA's areas of focus that are adept at identifying hallmarks of specific illegal activities. However, the volumes of data are growing exponentially. There is therefore a need to work with these experts to automate the processing of the data, learn what these hallmarks are and then search the data for instances worthy of further human analysis. The need is growing for such data-driven intelligence.

This data-driven prioritisation of human effort has been the subject of ongoing collaboration between the NCA and the University of Liverpool in the context of countering Child Sexual Exploitation. In this context, the primary challenge is that there are far too many criminals to arrest them all. It is therefore of paramount importance to arrest those who present the greatest threat to the public. That work has made apparent that it is important that the algorithms need to be scalable, accurate and transparent. Current work is therefore focused on the use of a distributed implementation of a Sequential Monte Carlo (SMC) sampler, an algorithm that can be configured to meet these three desiderata.

The focus of this studentship will be on tailoring the SMC sampler to be well suited to the data pertinent to some of the NCA's other priorities. Focus will be on access to data and experts as well as the integration of algorithms into the NCA's systems.

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