

DREAM

DATA, RISK & ENVIRONMENTAL ANALYTICAL METHODS
CENTRE FOR DOCTORAL TRAINING

www.dream-cdt.ac.uk



NERC DREAM CDT Big Data Spatial Risk Analytics PhD opportunities at Newcastle University

The NERC DREAM (Data, Risk and Environmental Analytical Methods) Centre for Doctoral training on Risk and Mitigation using BIG Data is a consortium of Newcastle, Cranfield, Cambridge and Birmingham Universities. We will be awarding 10 full PhD studentships to start in October 2016. Applications from eligible students are now sought for the Newcastle University DREAM projects relating to Big Data Spatial Risk Analytics for an October 2016 start. Newcastle projects available for October 2016 are:

Big data tools for distributed environmental hazard data lakes:

This PhD will utilise Big Data approaches to develop and implement a framework for distributed environmental risk data management. It will develop the informatics approaches, comprising the data management software (proprietary and open source) and related database architecture required to allow the virtual integration of multiple distributed data stores from different intuitions and organisations. The research will develop the interfaces required by environmental scientists to access data sets from different institutions in a seamless manner on the basis of shared/common data characteristics such as, for example, spatial and temporal coincidence. The tools developed in this research will be demonstrated by developing a DREAM consortium-wide distributed environmental data management system for the DREAM PhD projects and associated research projects. During the course of this PhD the successful candidate will work with DREAM projects in order to design and develop a set of tools that provide maximum utility. Existing data on environmental risk at DREAM institutions as well as data arising from NERC data centres such as the Data Catalogue Service (DCS) and Environmental Information Data Centre (EIDC) will be made available to this project. Partner ESRI (UK) Ltd will make available to the researcher the latest suites of big data analytical software tools from ESRI, providing appropriate support to assist in developing their application and usage alongside other open source informatics tools.

High-dimensional multi-objective spatial risk and sustainability optimisation tools using cloud-enabled evolutionary computing:

In this PhD, cloud computing will be employed together with evolutionary computing techniques (such as Genetic Algorithms (GAs)) to provide the next generation of multi-objective, spatial risk and sustainability development plans for the UK. Using nationally available data-sets on climate related hazards, such as probabilistic predictions of heat, pluvial, fluvial and storm surge related flooding, along with future predictions of population demographics, the PhD will investigate how temporal spatial plans can be developed that minimise exposure to future spatial risk whilst maximising key local, regional and national sustainability objectives (e.g., minimising overcrowding, reducing urban sprawl, maximising access to low emission public transport etc.). During the PhD, advanced computing training will be provided via a number of the Newcastle EPSRC CDT Big Data & Cloud Computing modules as well as modules on 'Bio-Computing', 'Big Data Analytics' and 'Geospatial Informatics'. The successful student will also have the opportunity to attend the two week NECSI Complex Systems modelling course in New England which previous PhD students at Newcastle have attended and found to be an excellent introduction to complex systems modelling and computing.

Deadline for applications is 26th February with interviews to be held before 24th March.

Full details on Newcastle University projects along with application form and eligibility conditions can be found at <http://www.dream-cdt.ac.uk/studying/application/>. The full list of all 2015 projects can be found at <http://www.dream-cdt.ac.uk/studying/application/>. Further details regarding individual projects or general enquiries regarding a DREAM PhD application can be directed to Stuart Barr (stuart.barr@newcastle.ac.uk).

Please forward completed application forms and related paperwork to Stuart Barr (stuart.barr@newcastle.ac.uk) by the 26th February deadline.

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