

Fully-funded PhD Studentship

(Reference SDTC 17-1)

Holistic, Data-driven, Service and Supply Chain Optimisation

Robert Gordon University & British Telecom

Closing Date: 12 noon Monday 12th June 2017

Applications are sought for a Research Studentship (PhD) in Computational Intelligence at Robert Gordon University.

Duration and Funding

The project will be up to 36 months duration, commencing in October 2017. The studentship is funded by British Telecom (BT) and The Data Lab and includes Home/EU tuition fees as well as a tax-free stipend of £14,296 per annum for three years. Non-EU students may also apply but will be required to pay the difference between Home/EU fees (£4,195 per year) and International fees (£15,180 per year).

Proposed Research

Optimisation algorithms are increasingly applied to a wide range of problems in industry. However, in real world applications, each optimisation problem is generally part of a wider chain of business processes through which decisions and data propagate. Problems may therefore be linked: decisions taken to solve one problem will affect the data, constraints and even objectives for another problem. Consequently, optimisation applied to isolated problems may adversely affect holistic operational goals. However, there is very little research work on how to optimize effectively when there is significant linkage between optimisation problems.

Using BT's workforce operational data as a source of case studies, along with other industrial data at RGU, the project will investigate a general framework for the formulation and solution of holistic optimisation problems applied to service and supply chains. This will include definition of the different modes of problem linkage, design of algorithms for linked optimisation and evaluation of their benefits on both real-world and artificial benchmark problems.

The project will advance research in a number of areas. Central to the project is artificial intelligence and machine learning. Optimisation of supply chains typically requires modelling of activities from operational data and so ancillary data science techniques likely to be explored on the project are probabilistic modelling, stochastic simulation and classification and clustering.

The student will be based at RGU, Aberdeen, UK for the first 6 months of the project and will focus on research training, literature review and developing key research questions. The student will then spend 12 months at the BT research

facility at Adastral Park, Ipswich, focussed on developing linked optimization problems benchmarks from real-world service and supply chain activity, working with BT datasets. The final 18 months will be carried out at RGU and will focus on theoretical, experimental and practical evaluation of the approaches developed, publication of results and development of the final thesis.

Key Skills

Applicants should have (or soon expect to have) a first class Honours degree or a Masters at Distinction level in Computing Science or a strongly related discipline. Strong programming skills are highly desirable. Some knowledge of AI, in particular Computational Intelligence techniques such as genetic algorithms, is also highly desirable, though not essential. Applicants should have good personal and communication skills, strong professionalism and integrity and be confident working on their own initiative.

Applications

Applicants should [Apply Online](#) by **12 noon on Monday 12th June 2017**. When applying, click on advertised studentships and select **SDTC 17-1**. Please submit a personal statement of interest in place of a research proposal. Interviews will take place on 29th June 2017.

All enquiries should be addressed to **Professor John McCall**, j.mccall@rgu.ac.uk