

Candidate Information

Position:	Research Fellow in Control Theory and Supply Chain Modelling and Optimisation
School/Department:	School of Electronics, Electrical Engineering and Computer Science
Reference:	25/112438
Closing Date:	Monday 24 March 2025
Salary:	£39,922 per annum
Anticipated Interview Date:	Friday 4 April 2025
Duration:	24 Months

JOB PURPOSE:

To be a highly productive, curious, ambitious and collaborative member in the School of Electronics, Electrical Engineering and Computer Science, EPIC research cluster, and a wide consortium of 17 project partners in the UniMaaS project. The Research Fellow will perform high level research in one or more areas within: control theory, reachability analysis, operations research, formal verification, optimisation, data-driven methods in control.

The goal of our research is (i) to explore new dynamic modelling structures for predicting, controlling, and optimising supply chains and service chains, (ii) develop analysis methods using reachability analysis, randomisation tools and other computation aware algorithm providing safety, robustness and performance certificates, (iii) develop and combine advanced set-based, optimisation and data-driven control algorithms.

The research is aligned within a wider effort of creating a new paradigm in manufacturing and in general in cyber-physical systems analysis and control, supply chain and value chain optimisation, creating reconfigurable systems and control methods that can be updated on-the-fly. In parallel with advancing baseline solutions in operations research and scheduling/resource allocation methods from well-defined use cases, our goal is to perform groundbreaking research in control theory, formal verification, and supply chain optimisation.

The post is a critical role, and as such, successful applicants will perform independent research, supervision, planning and management of the research project, collaboration with a wide network, and outreach.

MAJOR DUTIES:

1. Undertake research under supervision within the UniMaaS project and the EPIC group, in one or more of the following areas within: control theory, reachability analysis, operations research, formal verification, optimisation, data-driven methods.
2. Design, develop and refine research using a range of use cases of industrial partners.
3. Carry out analyses, critical evaluations, and interpretations of experimental data and the literature.
4. Produce high quality research outputs consistent with project aims and commensurate with career stage. This will include collaborating and co-authoring with PI and project team on outputs.
5. In consultation with the project team, promote research milestones and outputs at national and international conferences and through dissemination tools.
6. Produce high quality research outputs consistent with project aims and commensurate with career stage. This will include collaborating and co-authoring with PI and project team on outputs.
7. In consultation with the project team, promote research milestones and outputs at national and international conferences and through dissemination tools.
8. Assist grant holder in the preparation of funding proposals and applications to external bodies.
9. Carry out occasional educational support, supervision and demonstrating duties within the post holder's area of expertise and under the direct guidance of a member of academic staff.

10. Undertake supplementary duties relevant to the success of the project including administrative duties and additional training and development activities.

ESSENTIAL CRITERIA:

1. Normally have or be about to obtain a PhD in control theory/engineering, applied mathematics, electrical engineering, computer science, or similar.
2. Recent relevant research experience to include:
 - Undertaking research in one or more of the areas of control theory, control engineering, supply chain optimisation, formal methods, data-driven methods, cyber-physical systems control.
 - Working effectively as part of a research team in the development and promotion of the research theme.
 - Strong publication record commensurate with stage of career.
 - Strong Programming skills.
3. Evidence of having contributed to reporting/deliverable preparation/documenting research.
4. Evidence of management of the research project.
5. Ability to communicate complex information effectively in oral and written format.
6. Strong English language skills.
7. A team player who is prepared to work closely with members of a large multidisciplinary research team, as well as with industrial collaborators.
8. Able to visit collaborative partners and to attend meetings and conferences nationally and internationally as requested.

DESIRABLE CRITERIA:

1. Experience of working with academic and/or industrial collaborators.
2. Research in Hybrid systems analysis and control, set based methods, reachability analysis, data driven methods in control, scalable analysis and control tools, resource allocation scheduling.