University of East London

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JOB DESCRIPTION

Job Title:	Research Associate
Salary:	£45,579 per annum,
Duration:	Fixed term contract (36 months)
Location:	Dockland Campus, University of East London, London (UK)
Responsible to:	Academic Supervisor
Liaison with:	UEL Staff, UEL Research Support, Research External Partners

Job outline:
The Department of Engineering and Construction within the School of Architecture, Computing and Engineering (ACE) at the University of East London is seeking an outstanding Research Associate to carry out research in energy systems and develop data-driven distributed solutions to operate aggregates of buildings robustly and support grid operation. The role will allow you to contribute to climate change mitigation, one of this century's grand challenges. The primary function of the role is to work on the UKRI-funded research project 'Behavioural data-driven coalitional control for buildings'. Prof Eric C Kerrigan at Imperial College London (ICL) is leading the project, which is co-led by Dr Paola Falugi (University of East London) and Professor Goran Strbac (Imperial College London).

University of East London
The University of East London is one of the most diverse and vibrant universities in the global capital. Its pioneering and forward-thinking vision is making a positive and significant impact on the communities it serves, inspiring both staff and students to reach their full potential. Born in 1898 to serve the skills needs of the second industrial revolution, the University of East London is successfully progressing in its transformational 10-year Vision 2028 strategic plan, launched in February 2019, to advance knowledge and innovation to help people and the planet.

The University of East London (UEL) has an outstanding reputation for pursuing research addressing the urgent need to find long-lasting solutions to significant local and global challenges. The School of Architecture, Computing, and Engineering (ACE) at the UEL, offering multidisciplinary expertise in its three departments, is strongly committed to participatory, inclusive, empowering, and impact-led research on sustainability and industrial strategy priorities. Established in 2021, the Sustainability Research Institute (SRI) within UEL was one of the UK's first dedicated sustainability research institutes. The institute aims to support and foster multidisciplinary activities and lead the way in sustainability research and development. The institute has an excellent international reputation, bringing together researchers from across UEL and externally to deliver ground-breaking research and development, driving change locally, nationally, and internationally. The institute launched the plan to become a net zero carbon campus by 2028, and the plan includes working alongside partners

like Siemens to evolve a smart campus strategy and build a growing reputation as an institution that will produce sustainability solutions. The School of Architecture, Computing and Engineering (ACE) has research groups such as Smart City, Resilient Built Environment, Culture and Environment, Intelligent Technologies, Research Enhanced Learning & Teaching, and Resilient Materials and Structure. It also collaborates closely with other research Institutes/Centres in UEL, such as the Centre for Fintech, the Centre for Inclusion and Creative Practice, and the AI & Smart Cities Centre of Excellence.

Project outline

This is a 36 months UKRI Research project between UEL and ICL to develop distributed solutions to reliably manage energy use across groups of buildings. We will consider the advantage of dynamically forming coalitions according to the environment's variability and individual real-time energy needs.

Buildings are responsible for about 40% of carbon emissions and consume about 40% of all produced energy in the UK. Transforming how buildings use and produce energy is a fundamental stepping stone to achieving net-zero carbon emissions and sustainable economic growth. The abundance of data, flexible technologies and advanced control approaches open exciting opportunities to achieve cost-effective system decarbonisation and create places where people love to live for the increased comfort standards. A radical transformation of the building sector is possible using real-time monitoring, learning capabilities, advanced control strategies, distributed optimisation and coordination. The challenges that arise from the inherent complexity, reliability, and performance issues require a multidisciplinary approach to develop novel optimisation-based adaptive control methods and distributed architectures to achieve the desired trade-off between societal and individual objectives. The project will benefit of the collaboration with UK Power Networks and SSE Energy Solutions, who will bring real-life experience to the project as a low-carbon investor, developer and supplier on requirements to scale and de-risk investments to validate innovative concepts.

We seek an associate with a strong background in distributed optimisation and data-driven approaches.

The post is based at UEL, and the project involves regular meetings at ICL, as well as travel to other stakeholder sites as appropriate.

Job Duties

- Carry out the project tasks and deliver the outcomes as outlined in the project plan.
- Disseminate the findings to the project team.
- Undertake necessary training.
- Write reports, and present these at meetings, as well as at national conferences and symposia with other members of the project team.
- Prepare research papers for publication in high impact journals, in line with the expected scholarly activities of the University Research staff, but in accordance with the commercial sensitivity of collaborating companies.
- Travel to various other locations within the UK, and possibly overseas, as required.

- To undertake such other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Please submit your resume and a cover letter detailing your relevant experience and skills along with your application form.

CVs without a completed application form will not be accepted.

Informal enquiries may be addressed to Dr Paola Falugi at p.falugi@uel.ac.uk

PERSON SPECIFICATION

Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1 – Application
2 – Presentation
3 – Interview

EDUCATION, QUALIFICATIONS AND ACHIEVEMENTS:
Essential Criteria:

- PhD in an area involving optimization and data-driven methodologies. (A)

KNOWLEDGE AND EXPERIENCE:
Essential Criteria:

- Experience in developing optimization algorithms and distributed optimization strategies. (A/I)
- Background and experience in control engineering and predictive control strategies. (A/I)
- Strong programming skills. (A/I)
- Experience in data-driven methodologies. (A/I)

Desirable Criteria:

- Knowledge of building modelling techniques (A/I)
- Experience in energy systems modelling. (A/I)
- Experience in applying machine learning approaches. (A/I)

SKILLS AND ABILITIES:
Essential Criteria:

- Ability to communicate with a wide range of academic and industrial personnel. (A/I)
- Ability to publish excellent articles that both deliver high impact and deep analysis. (A/I)
- Excellent problem-solving skills and the ability to work independently without supervision and as part of a team. (A/I)

Desirable Criteria:

- Effective communication skills, including the ability to convey technical information to non-technical stakeholders. (A/I)
- Experience of working using own initiative and in a multidisciplinary team within a varying environment. (I)

OTHER ESSENTIAL CRITERIA:

- Able to demonstrate an understanding of equality and diversity, and its practical application. (A)

Criteria tested by Key: A = Application form C = Certification I = Interview T = Test including presentation