



THE POST

College:	<u>College of Engineering, Mathematics, and Physical Sciences</u>
Post:	Postdoctoral Research Fellow
Reference No:	P67341
Grade:	F
HERA:	RFEL
Reporting To:	Dr Ke Li

Job Description

An exciting opportunity to work with Dr Ke Li on a recently awarded prestigious UKRI Future Leaders Fellowship. To create and contribute to the creation of knowledge by undertaking world class research in evolutionary computation, machine learning and its applications in various engineering domain including, but not limited to, water engineering, renewable energy, healthcare and software engineering.

Main purpose of the job:

To create a revolutionary general-purpose optimisation paradigm, placing adaptive automation at the heart of the development process. Instead of developing a domain-specific optimisation algorithm well-crafted for certain given optimisation problems, this project aims to take an innovative step forward and develop a transfer optimisation system (TOS) that enables an adaptive automated optimisation across problems. Based on novel synergies between nature-inspired optimisation (in particular, evolutionary computation) and machine learning (especially emerging transfer learning), the TOS will learn knowledge from the experience of solving various complex optimisation exercises. It will then autonomously and selectively transfer such knowledge to new and unseen optimisation tasks. Thus, making new problem-solving process (es) more effective and efficient.

Main duties and accountabilities:

1. To undertake research as appropriate to the UKRI Future Leaders Fellowship project on "Transfer Optimisation System for Adaptive Automated Nature-Inspired Optimisation". The responsibilities may include all or some of the following:
 - Formulate and define detailed research questions with the support of the project PI;
 - Carry out world class research, including both theoretical analysis and experimental studies, evidenced by research outputs in top international venues (journals and conferences);
 - Disseminate research findings for publications in international journals and conferences, and research seminars;
 - Contribute to developing new theories, techniques and methods in meta-heuristic optimisation and machine learning;
 - Apply knowledge in a way which develops new intellectual understanding;
 - Writing or contributing to publications or disseminating research findings using media appropriate to the discipline;
 - Deal with problems that may affect the achievement of research objectives and deadlines;
 - Contribute to writing bids for further research funding where appropriate
2. To contribute to supervise BSc and MSc students on research related work and provide assistance to the supervisor in guiding PhD students where appropriate.
3. To routinely communicate complex and conceptual ideas to those with limited knowledge as well as to peers using high level skills and a range of media and to present the results of scientific research to sponsors and at conferences.
4. As determined by the nature of the project and at the direction of the PI, to plan, co-ordinate and implement research programme activities including:

- Managing the use of research resources and ensuring that effective use is made of them;
- Monitoring and reporting on the use of research budgets;
- Undertake management/administration arising from research, including organising project meetings with both internal and external collaborators, organising industrial-focused workshops, symposiums, producing project progress reports, etc;
- Contribute to enterprise, business development and/or public engagement activities of manifest benefit to the Group, Department, College and the University, under supervision of the project PI, e.g., outreach to industry, development of demos, etc;
- Contribute to group research-related activities and research-related administration, i.e., coordinating seminar series, hosting visitors and their seminars, leading discussion groups, etc;
- Helping to plan and implement commercial and consultancy activities.

This job description summarises the main duties and accountabilities of the post and is not comprehensive: the post-holder may be required to undertake other duties of similar level and responsibility. Please visit the Human Resources website to view the Research Fellow role profiles.

Person Specification

Competency	Essential	Desirable
Attainments/Qualifications	PhD in Evolutionary Computation and Machine Learning or a closely related area.	Be an internationally recognised authority in the subject area.
Skills and Understanding	<p>Sufficient specialist knowledge in Evolutionary Computation, Machine Learning and Complex Networks follow the research programmes and methodologies.</p> <p>A track record of high-quality research, evidenced by publications in leading journals and conferences, or by the PhD thesis</p> <p>High level analytical capability and mathematical skills, e.g., in matrix computation, applied probability and statistics.</p> <p>Excellent software development skills.</p>	
Prior Experience	Experience of conducting high-quality research.	<p>Experience of acting as principal investigator or theme leader on research projects.</p> <p>Experience of managing research projects and research teams</p>
Behavioural Characteristics	<p>Excellent written and verbal communication skills.</p> <p>Able to communicate complex and conceptual ideas to a range of groups.</p> <p>An outstanding team player who can also work independently.</p> <p>Evidence of the ability to collaborate actively within the Institution and externally to complete research projects and advance thinking.</p> <p>Able to participate in and develop external networks.</p> <p>Able to balance the pressures of research and competing deadlines.</p>	<p>Able to identify sources of funding, generate income, obtain consultancy projects, or build relationships for future activities.</p>

Terms & Conditions

Our Terms and Conditions of Employment can be viewed [here](#).

Further Information

Please see our [website](#) for further information on working at the University of Exeter.