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University of Strathclyde Glasgow

Research Associate in AI Verification

Department	Computer and Information Sciences (www.strath.ac.uk/science/computerinformationsciences/)		
Faculty	Faculty of Science (www.strath.ac.uk/science/)		
Staff Category	Research	Reference No	300542
Reports To	Head of Department	Grade:	7
Salary Range:	£32817 - £40322	Contract Type:	Fixed Term (Until 30/08/2023)
FTE:	1 (35 hours/week)	Closing Date	Sunday 12th July 2020

Job Advert

AI applications have become pervasive: from mobile phones and home appliances to stock markets, autonomous cars, robots, and drones. Each application domain comes with a rich set of requirements such as legal policies, safety and security standards, company values, or simply public perception. **AISEC** aims to build a sustainable, general purpose, and multidomain methodology and development environment for policy-to-property secure and explainable by construction development of complex AI systems.

This project will employ *types* with supporting *lightweight verification* methods (such as SMT solvers) in order to create and deploy a novel framework for documenting, implementing and developing policies for complex deep learning systems. Types will serve as a unifying mechanism to embed security and safety contracts directly into programs that implement AI. The project will produce an integrated development environment with infrastructure to cater for different domain experts: from lawyers and security experts to verification experts and system engineers designing complex AI systems. It will be built, tested and used in collaboration with industrial partners in two key AI application areas: autonomous vehicles and natural language interfaces (aka chatbots).

The focus of this particular role is to develop the necessary theory and implementations to integrate novel techniques in AI specification and verification into a type theoretic framework.This will involve working closely with the other universities and partners within the project.

The project spans several subjects: type theory, automated and interactive theorem proving, security, AI and machine learning, autonomous systems, natural language processing and generation, legal aspects of AI. It will cover two main **application areas**: **autonomous cars** and **chatbots**, drawing from expertise and infrastructure provided by industrial partners working in these two areas. **AISEC** has a significant international span, with 12 partners from Academia and Industry in Europe (France, Germany, Israel, the Netherlands, Norway) and the US. Researchers joining this project will have excellent opportunities to travel to international conferences, organise scientific events, spend time with industrial partners, collaborate with academic leaders in the field, develop their own research profiles as well as gain experience in other AI and CS disciplines.

AISEC is a joint project between the Heriot-Watt University and the Universities of Strathclyde and Edinburgh. More information about the project is available at http://laiv.uk/index.php/vacancies/.

Please note this post is on a fixed term basis ending 30th August 2023.

Job Description

Brief Outline of Job:

As a Research Associate, under the general guidance of Dr. Robert Atkey, you will develop research objectives and proposals, and play a lead role in the **AISEC** project. The focus of this particular role is to develop the necessary theory and implementations to integrate novel techniques in AI specification and verification into a type theoretic framework. This will involve working closely with the other universities and partners within the project. You will also engage where required in relevant teaching, professional and knowledge exchange activities; and input to administrative activities.

Main Activities/Responsibilities:

1.	As part of a wider research group or programme, develop research objectives and proposals for own or joint research and play a lead role in relation to a specific project/s or part of a broader project, with guidance from senior colleagues as required.
2.	Plan and manage own workload, with guidance from colleagues as required.
3.	Conduct individual and/or collaborative research, including determining appropriate research methods and contributing to the development of new research methods.
4.	Identify sources of funding and contribute to the securing of funds for research, including drafting grant proposals and planning for future proposals.
5.	Write up research work for publication, individually or in collaboration with colleagues, and disseminate results as appropriate to the discipline by, for example, peer reviewed journal publications and presentation at conferences.
6.	Join external networks to share information and ideas, inform the development of research objectives and to identify potential sources of funding.
7.	Collaborate with colleagues to ensure that research advances inform departmental teaching effort.
8.	Collaborate with colleagues on the development of knowledge exchange activities by, for example, participating in initiatives which establish research links with industry and influence public policy and the professions.
9.	Contribute in a developing capacity to Department/School, Faculty and/or University administrative and management functions and committees.
10.	Engage in continuous professional development.

Person Specification

Educational and/or Professional Qualifications (E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)
E1 Good honours degree and PhD (or equivalent professional experience) in an appropriate discipline i.e Computer Science or Mathematics.
D1 Membership of relevant Chartered/professional bodies (including Higher Education Academy).
Experience
E2 Sufficient breadth or depth of knowledge in one or more of Type Theory, Machine Learning, Automated and/or Interactive Theorem Proving, Program Verification, Abstract Interpretation, Programming Language Semantics, or Programming Language Implementation to contribute to research programmes and to the development of research activities.
D2 Some relevant work experience.
D3 Experience of relevant student supervision and teaching activities.
D4 Experience of knowledge exchange related activities.
Job Related Skills and Achievements
E3 Developing ability to conduct individual research work, to disseminate results and to prepare research proposals.

E4 Ability to plan and organise own workload effectively.
E5 Ability to work within a team environment.
Personal Attributes
E6 Excellent interpersonal and communication skills, with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences.

Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted before interview without further permission, unless you indicate that you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make you the right candidate for the job. Applicants should also complete the Equal Opportunities Monitoring Form.

Other Information

Further information on the application process and working at Strathclyde can be found on our website (http://www.strath.ac.uk/hr/workforus).

Informal enquiries about the post can be directed to Dr Robert Atkey, Chancellor's Fellow, email: robert.atkey@strath.ac.uk

Conditions of Employment

Conditions of employment relating to the Research staff category can be found at: Conditions of Employment.

Rewards and Benefits

Our staff have access to a wide range of outstanding benefits that include financial rewards, family friendly and wellbeing benefits and career development opportunities, details of which can be found here.

Probation

Where applicable, the successful applicant will be required to serve a 9 month probationary period.

Pension

The successful applicant will be eligible to join the Universities' Superannuation Scheme. Further information regarding this scheme is available from Payroll and Pensions.

Interviews

It is anticipated that interviews for this post will be held in late July 2020.

Equality and Diversity

We value diversity and welcome applications from all sections of the community.

The University currently holds a Bronze Athena SWAN award, recognising our commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia.

University Values

The University's Values capture what we're all about: who we are, what we believe in and what we stand for. Our Values have been derived from how we act and how we expect to be treated as part of Strathclyde.