

RESEARCH STUDENTSHIP OR BURSARY

Research studentships are offered to students wishing to undertake a PhD programme. All studentships are highly competitive and you should ensure (and demonstrate) that there is a good match between your own qualifications and interests and those being sought for the particular studentship.

Research Centre where studentship will be held	Computer Science Research Centre, Faculty of Natural Sciences, Keele University.
Studentship reference	FNS GS 2018-08
Web link to any further information (e.g. Research Institute)	Computer Science Research Centre - https://www.keele.ac.uk/scm/research/compsci/ Faculty Research Office - http://www.keele.ac.uk/fnsro/
Research topic or field - title	Principled agent-based simulation

<p>Research topic or field – full description (or attach document)</p>	<p>Research Context:</p> <p>Agent-based simulation can be used to model the dynamics of natural systems: each agent represents a low-level component (e.g. a cell), and the finished simulator aims to model the higher level dynamics (e.g. the progress of a disease or development of part of an embryo). A well-engineered and documented simulation can be used to address questions and run experiments that cannot be run in vivo, for instance because the experimental set-up perturbs the dynamics of the system studied.</p> <p>I have been involved with simulation projects over a decade, and have access to a range of example projects. However, to date, every simulation has been designed and implemented afresh. This PhD is to explore software engineering support for simulation, with the aim of producing design and implementation support that enables reuse and modification of simulators.</p> <p>Target design languages are behavioural models (e.g. any form of state machine, Petri nets, UML activity and sequence diagrams). Target implementation languages are currently Java Mason (several existing simulators) or FlameGPU (potential collaboration to develop new simulators). We anticipate using model-driven engineering and model transformation to achieve design-to-code mappings and support reuse and re-engineering.</p> <p>The PhD would be based at Keele in Prof. Polack’s team, but would involve working with developers at University of York, and the York Computational Immunology Lab.</p> <p>The research will be supervised by Prof. Fiona Polack in the Centre for Computer Science Research at Keele University.</p>
<p>Available from (date)</p>	<p>Available now</p>
<p>Funding support available – Fees, stipend, duration</p>	<p>Open to fully self-funded students only. Please note that self-funded applicants must provide funding for both tuition fees and living expenses for the 3 year duration of the research. There is a future possibility of competitive scholarship awards for outstanding applicants (1st class honours), however, none are currently available. For information regarding University tuition fees please see http://www.keele.ac.uk/pgresearch/feesandfinance/</p>
<p>Source of funding</p>	<p>No funding available. Opportunity for self-funded applications only.</p>

Eligibility criteria	<p>Eligibility Criteria: Applications are welcomed from science, technology, engineering or mathematics graduates with (or anticipating) at least a 2.1 honours degree or equivalent. Applicants will require good computing skills, ideally with good working knowledge of modelling (UML, Petri nets) and implementation using model transformation. They should be self-motivated and have the ability to work both independently and as part of a team.</p> <p>The opportunities are open to UK/EU students and overseas students. The collaborative and presentation aspects of the research require good English language and communication skills.</p>
Terms and conditions of studentship	As per the University Code of Practice
Number of studentships available	N/A
Application details	go to http://www.keele.ac.uk/pgresearch/studentships/ and click on the "Apply online here" button in this studentship.
Closing date for applications	Applications are accepted all year round.
Contact for further information and to whom applications will be sent	<p>Informal enquiries about the project should be made to the Project Lead, Prof. Fiona Polack (f.a.c.polack@keele.ac.uk), and should include a CV and a detailed expression of interest which includes an account of eligibility and funding and a summary of relevant interests, skills and experience. Full applications to:</p> <p>http://www.keele.ac.uk/pgresearch/studentships/</p>

Candidate profile

	Essential	Desirable
Qualifications, Experience and Skills	<p>Applications are welcomed from science, technology, engineering or mathematics graduates with (or anticipating) at least a 2.1 honours degree or equivalent. Applicants will require good computing skills, ideally including software modelling and model driven engineering.</p> <p>Applicants should have an enthusiasm for software engineering and an interest in agent simulation of complex systems. They should be self-motivated and have the ability to work both independently and as part of a team.</p> <p>The opportunities are open to UK/EU students and overseas students. The collaborative and presentation aspects of the research require good English language and communication skills.</p>	
Attitude and Personality	<p>Applicants should be self-motivated and have the ability to work both independently and as part of a team.</p>	