

OXFORD UNIVERSITY COMPUTING LABORATORY

Project “Ubiquitous and Extreme Computing”, Verification for Autonomous Ubiquitous Sensing

James Martin 21st Century School

Starting Date: 1 September 2010

Postdoctoral Research Assistant Post Grade 07S Further Particulars

The Project

Oxford University Computing Laboratory (OUCL) and Oxford e-Research Centre have been awarded funding for the project "Ubiquitous and Extreme Computing" by the James Martin 21st Century School. This project has several parts. The present advertisement relates to the project part "Autonomous Ubiquitous Sensing" which deals with automated verification for sensor networks and will be directed by Professor Marta Kwiatkowska, in collaboration with Dr Niki Trigoni.

Wireless sensor networks have a multitude of applications, for example in environmental monitoring, autonomous transport, or intelligent buildings. There are significant challenges in engineering and programming of effective sensor-based systems, in view of resource limitations of the devices and unreliability of wireless links. At the same time, sensor networks are increasingly often deployed in safety-critical contexts that require sound and autonomous decision making and guarantees on their correct behaviour. This research will bring together two hitherto separate streams of work, (1) Trigoni's group, focused on developing systems and novel algorithmic techniques for data collection in sensor networks, and (2) Kwiatkowska's group, aiming to develop foundations and implementation techniques for automated quantitative verification.

The focus of this role is on the implementation of software verification tools for sensor networks, such as NesC/TinyOS or Contiki OS. The successful candidate will be expected to collaborate closely with researchers building and deploying sensor networks, including Trigoni group and relevant institutes in the 21st Century School concerned with environmental monitoring, and to undertake the development of verification tools and experimental verification case studies. This research will leverage the work of Kwiatkowska's ERC project VERIWARE "From software verification to everywhere verification", which aims to develop a broad range of models and verification techniques for ubiquitous computing systems from a foundational perspective.

The post

We wish to appoint a Research Assistant to undertake innovative research as defined by the project proposal and to work with colleagues to progress the objectives of the project as part of the project team. Candidates will be expected to initiate publication of research results in top ranking journals and present research results at leading conferences.

Selection Criteria

Applicants should have (or expect shortly to obtain) a doctoral degree in computer science or a related discipline. Applicants should further have:

The focus of this role is on the implementation of software verification tools for sensor networks,. The successful candidate will be expected to collaborate closely with researchers building and deploying sensor networks, and to undertake the development of verification tools and experimental verification case studies.

- familiarity with and experience of programming for sensor networks, such as NesC/TinyOS or Contiki OS;
- excellent knowledge of at least two of the following: concurrency, automata and logic, model checking and static analysis;
- strong software design, programming and systems skills, and a proven record of system and experimental prototype implementations;
- excellent scientific writing ability and good oral communication skills;
- publications in areas relevant to the project;
- ability and willingness to mentor or supervise doctoral students; project management skills; ability and willingness to participate in the development of experimental software.

Salary and Benefits

The post, which is a full time, up to 36 months appointment, starting on or after 1 September 2010, has a salary on the University grade 07S scale (currently £28,983 to £35,646), includes membership of the University Superannuation Scheme (USS) and has an annual leave entitlement of 38 days per year (inclusive of all public holidays and university closed periods).

Method of Application

Applications should be in the form of a letter of application (clearly stating the post title) setting out how the candidate meets the selection criteria, and supported by a full curriculum vitae, together with the names and addresses of two referees. **Candidates should state clearly which post they are applying for.**

These should preferably be sent by email (most formats accepted) to:

Job09@comlab.ox.ac.uk

or alternatively, posted to: The Administrator, Oxford University Computing Laboratory, Wolfson Building, Parks Road, Oxford OX1 3QD.

Applications should be sent in time to arrive by the closing date of **5pm on Friday 16th July 2010**. Applications received after this time may not be considered.

Candidates must also ask their referees to consider these further particulars and email their reference directly to job09@comlab.ox.ac.uk or, alternatively, post or fax it to the above address (fax (+44 1865 283532) such that the reference arrives by, or shortly after, the closing date.

The policy and practice of the University of Oxford require that all staff are offered equal opportunities within employment. Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. Subject to statutory provisions, no applicant or member of staff will be treated less favourably than another because of his or her age, sex, marital or civil partnership status, sexual orientation, religion or belief, racial group or disability.

Applicants who would need a work visa if appointed to the post are asked to note that under the UK's new points-based migration system they will need to demonstrate that they have sufficient points, and in particular that:

(i) they have sufficient English language skills (evidenced by having passed a test in basic English, or coming from a majority English-speaking country, or having taken a degree taught in English)

and

(ii) that they have sufficient funds to maintain themselves and any dependants until they receive their first salary payment.

Further information is available at:

<http://www.ukba.homeoffice.gov.uk/workingintheuk/tier2/generalarrangements/eligibility/>

All data supplied by applicants will be used only for the purposes of determining their suitability for the post and will be held in accordance with the principles of the Data Protection Act 1998 and the University's Data Protection Policy, but if the person appointed to the post is a migrant sponsored under the UK's new points-based migration system, we are required to retain all applications for the duration of the sponsorship