



UNIVERSITY OF OXFORD

Oxford University Computing Laboratory

Project: Predictable Software Systems, part of Large-Scale Complex IT Systems (LSCITS) research programme

Two Year Grade 07S Post-doctoral Research Assistant Post

Further Details

Professor Marta Kwiatkowska from the Oxford University Computing Laboratory (OUCL) has been awarded an EPSRC grant to for the project Predictable Software Systems, part of the Large-Scale Complex IT Systems (LSCITS) research programme. LSCITS (pronounced else-its) is a collaboration involving five institutions: Dave Cliff (Bristol, PI), Justin Keen (Leeds), Marta Kwiatkowska (Oxford), John McDermid (York) and Ian Sommerville (St Andrews). The Predictable Software Systems (PSS) is a theme led by Professor Marta Kwiatkowska. The main focus of the LSCITS programme is on novel approaches and techniques for managing change. In this context, the PSS theme aims to develop the foundations and software technology for the verification of adaptive systems, such as those that vary their response depending on scenario or context.

Large-scale IT systems have been implemented in many organisations. Their inherent complexity stems from a variety of causes: rapidly changing needs of diverse stakeholders, integration with legacy systems, and a critical need to deliver performance and dependability. The main focus of the LSCITS programme is on novel approaches and techniques for managing change. Traditional design and validation technologies are unable to deal with the needs for variability of context, for adaptability to changing scenarios, multiplicity of infrastructures and devices, and for addressing real-time and mobility issues.

The PSS project has the following broad aims:

1. To develop foundations and algorithms for automated verification of adaptive systems, such as those whose behaviour depends on scenario or context.
2. To investigate the use of multi-objective approaches in quantitative evaluation of performance and dependability of embedded real-time software.
3. To investigate the feasibility of methods for synthesizing policies, such as access control and power management, from specifications.
4. To develop methodology for trust, privacy and security assurance, which takes into account sociological aspects and context variability.

The PSS team will be led by Professor Kwiatkowska and will include the postdoctoral researcher advertised here, as well as two existing team members who are respectively addressing scalability and quantitative synthesis. More information about the PSS project can be found at:

<http://www.comlab.ox.ac.uk/projects/predictablessoftware/index.html>

The PSS team will be members of the OUCL Verification theme. More information about research projects and members of the themes can be found at:

<http://www.comlab.ox.ac.uk/research/verification/>

In the context of this project, OUCL has openings for one post-doctoral research associate for up to two years.

Main Duties and Responsibilities

The role will require the post-holder 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 PSS project team. The exact scope of the research will depend on the skills of the candidates appointed who will be expected to fulfil the selection criteria defined below. The postholder may also be required to undertake some programming and teaching in areas related to the project.

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, mathematics, or related discipline;
- excellent knowledge of theoretical computer science and quantitative verification;
- excellent scientific writing ability;
- publications in areas relevant to this project;
- good communication skills in English;
- ability and willingness to mentor or supervise doctoral students;
- ability and willingness to teach verification-related topics;
- proven ability and willingness to participate in the development of experimental software.

Moreover, applicants will be preferred who are knowledgeable in at least two of the following areas:

- model checking;
- synthesis;
- quantitative model checking;
- machine learning;
- security and/or trust;
- programming and software engineering.

Salary and Benefits

The post, which is full time, is available for up to two years, can start immediately and not later than 1st October 2010, and has a salary on the University grade 7 scale (currently £28,983 to £35,646). This 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:

Job04@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 **28th May 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 **job04@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