Job description and selection criteria

Job title	Researcher in Quality-Centric Software and Data Engineering (2 posts)
Division	MPLS
Department	Computer Science
Location	Wolfson Building, Parks Road, Oxford.
Grade and salary	Grade 8: Salary £38,511 – £45,954 p.a.
Hours	Full Time
Contract type	Fixed term for up to 3 years
Reporting to	Professor Jim Davies
Vacancy reference	116577

Introduction

The University

The University of Oxford is a complex and stimulating organisation, which enjoys an international reputation as a world-class centre of excellence in research and teaching. It employs over 10,000 staff and has a student population of over 22,000.

Most staff are directly appointed and managed by one of the University's 130 departments or other units within a highly devolved operational structure — this includes over 6,500 'academic-related' staff (postgraduate research, computing, senior library, and administrative staff) and over 2,700 'support' staff (including clerical, library, technical, and manual staff). There are also over 1,600 academic staff (professors, associate professors, lecturers), whose appointments are in the main overseen by a combination of broader divisional and local faculty board/departmental structures. Academics are generally all also employed by one of the 38 constituent colleges of the University as well as by the central University itself.

Our annual income in 2012/13 was £1,086.9m. Oxford is one of Europe's most innovative and entrepreneurial universities: income from external research contracts exceeds £436.8m p.a., and more than 80 spin-off companies have been created.

For more information please visit www.ox.ac.uk/staff/about_the_university.html

MPLS Division

The Mathematical, Physical, and Life Sciences Division (MPLS) is one of the four academic divisions of the University.

Oxford is widely recognised as one of the world's leading science universities. In the 2008 UK Research Assessment Exercise over 70% of research activity in MPLS was judged to be world-leading (4*) or internationally excellent (3*), and Oxford was ranked first in the UK across the mathematical sciences as a whole.

The MPLS division's ten departments and three interdisciplinary units span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. We have over 6,000 students and research staff, and generate over half of our funding from external research grants. Our research addresses major societal and technological challenges and is increasingly interdisciplinary in nature. We collaborate closely with colleagues in Oxford across the medical sciences, social sciences and humanities, as well as with researchers from around the world.

For more information, please visit http://www.mpls.ox.ac.uk/

Department of Computer Science

The Department of Computer Science (DoCS) was established in 1957. It is one of the UK's leading Computer Science Departments (ranked first in a number of newspaper rankings, and third in terms of research power). In the RAE in 2008, 80% of the submitted research was found to be in the top two tiers, either 4* (world-leading) or 3* (internationally excellent). Most members of the Department are active in externally sponsored research, with both government and industrial funding. At present there are 67 members of academic staff and over 100 research staff.

DoCS has close links with government, industry, and other departments within the University. Among the latter are Mathematics, Engineering, Physics, Statistics and a number of life sciences departments. It has a major role in the rapidly-developing field of e-Science alongside the Oxford e-Research Centre, an independent unit with which we share a building. This is an essentially inter-disciplinary activity which is at present attracting major funding from a number of sources. At present DoCS holds over £50m in external research contracts.

Research in DoCS is currently managed in seven themes. *Programming Languages and Software Engineering* (led by Professor Jeremy Gibbons) works on a wide variety of areas including model-driven development, functional programming, and static analysis; *Security* (led by Professor Bill Roscoe) specialises in cybersecurity, protocol analysis, trusted computing, networking, and human-centred computing; *Verification* (led by Professor Marta Kwiatkowska) covers probabilistic and software model checking, time and concurrency, and hardware; *Computational Biology* (led by Professor David Gavaghan) builds computational models of biological systems; *Foundations, Logic and Structures*, (leader Professor Samson Abramsky) includes groups working on quantum information and computation, and game semantics; *Information Systems* (led by Professor Ian Horrocks) has groups working on databases, knowledge representation and reasoning, and computational linguistics; and

Algorithms (led by Professor Leslie Ann Goldberg) covering computational complexity, algorithmic game theory, and constraint satisfaction.

For more information please visit: http://www.cs.ox.ac.uk/

Job description

Research topic	ALIGNED: Quality-Centric Software and Data Engineering
Principal Investigator / supervisor	Professor Jim Davies
Funding partner	EU Horizon 2020 programme

Overview of the role

The EU-funded project *ALIGNED: Quality-Centric Software and Data Engineering* (http://aligned-project.eu/) will develop new ways to build and maintain IT systems that use big data on the web. ALIGNED brings together world class computer science researchers (TCD, Oxford, Leipzig), software companies specialised in data-intensive systems (Semantic Web Company), information companies (Wolters Kluwer Germany) and the academic curators of Seshat: Global History Databank, large datasets describing world history and archaeology (Oxford, Poznan). Together they will create more efficient methods of building software systems that extract, process, publish and share rich data. This will lay the foundations for the next generation of big data systems that lower costs and deal with the web data challenges of dynamism, complexity, scale and inconsistency.

The research assistants will work full-time on research and dissemination activities associated with ALIGNED. The Oxford CS focus in ALIGNED will be on methodology for model-driven engineering, and in particular in the generation and evolution of data and software assets. This will build on work we have been doing for the last decade on model-driven development of tools and artifacts to support clinical research, providing and maintaining semantic annotations to facilitate data integration.

Candidates must have a solid research record in one or more of the following areas: model-driven engineering, semantic technologies, semi-structured data, functional programming. The project includes both foundational research and tool development, bringing together theory and practice, and the successful candidates will be comfortable in both worlds.

Responsibilities/duties

The main duties of the successful candidates will include:

- Develop research questions within a specific context, conduct individual research, analysing detailed and complex qualitative and/or quantitative data from a variety of sources, and generate original ideas by building on existing concepts
- Develop and implement new research methodologies and materials
- Regularly write research articles at an international level for peer-reviewed journals, book chapters, and reviews. Present papers at international conferences, and lead seminars to disseminate research findings

- Supervise the progress of the project research team, which will involve planning and working with others to ensure that they are achieving their deliverables associated with the relevant work package, ensuring that they are familiar with their individual project scope and meet set deadlines to deliver on the overall project.
- Manage the effective use of resources associated with the project, including the budget.
- Identify and pursue opportunities to raise research funds. This may be through grant applications, such as those gained for an EPSRC Senior Researcher role, funds to run a specific project-related conference, or funds associated with an Impact Acceleration account to extend the project for further research purposes.
- Share responsibility for shaping the research group's plans and the writing of group-funding applications for new research projects
- Represent the research group at external meetings/seminars, either with other members of the group or alone
- Carry out collaborative projects with colleagues in partner institutions, and research groups
- Perform research in relevant areas, both independently and in collaboration with other project participants;
- Design, develop, and document software tools to further the project goals;
- Disseminate research results through publication in peer reviewed journals, conferences and workshops;
- Share expertise in the form of demonstrations, lectures, workshops;
- Assist in other project-related activities, such as writing reports, participating in reviews, visiting project partners.
- Any other duties as are within the scope, spirit and purpose of the job, as requested by the post holders' line manager or the Principal Investigators.

There will also be the opportunity to get involved in teaching in the Computer Science department at Oxford. This may include lecturing, small-group tutoring of undergraduates, assisting with practicals, and supervising graduate student projects.

Selection Criteria

Essential:

- A PhD in Computer Science or related field with post-qualification research experience
- Strong publication record and familiarity with the existing literature and research in the field.
- A solid research record in the broad areas of model-driven development and semantic technologies
- Practical development skills, especially in object-oriented and/or functional programming languages
- Proven ability to balance the theory and practice of software
- Evidence of research independence and creativity
- Ability to independently plan and manage the research project
- A genuine interest in the aims of the research programme
- Ability to work in a team
- Good verbal and written communication skills in English

Desirable:

- Potential to provide scientific leadership and supervision within the project

- Prior experience in one or more of: model transformations, big data, semantic web, semi-structured data
- Experience of managing a research budget
- Experience of making grant applications

Working at the University of Oxford

For further information about working at Oxford, please see:

http://www.ox.ac.uk/about_the_university/jobs/research/

Salary and Benefits

The posts, which are full-time appointments, are funded by the European Union Horizon 2020 programme and are available until 31st January 2018, starting as soon as possible. They both have a salary on the University grade 08S scale (currently £38,511 to £45,954). 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).

How to apply

If you consider that you meet the selection criteria, click on the **Apply Now** button on the 'Job Details' page and follow the on-screen instructions to register as a user. You will then be required to complete a number of screens with your application details, relating to your skills and experience. When prompted, please provide details of two referees and indicate whether we can contact them at this stage. You will also be required to upload a CV and supporting statement. The supporting statement should describe what you have been doing over at least the last 10 years. This may have been employment, education, or you may have taken time away from these activities in order to raise a family, care for a dependant, or travel for example. Your application will be judged solely on the basis of how you demonstrate that that you meet the selection criteria outlined above and we are happy to consider evidence of transferable skills or experience which you may have gained outside the context of paid employment or education.

Please save all uploaded documents to show your name and the document type.

All applications must be received by **midday** on the closing date stated in the online advertisement.

Candidates must also ask their referees to consider this job description and email their reference directly to **job10@cs.ox.ac.uk** or, alternatively, post or fax it to: The Administrator, Department of Computer Science, Wolfson Building, Parks Road, Oxford OX1 3QD, such that the reference arrives by, or shortly after, the advertised closing date. You will also be asked to provide reference details as part of the online application process and will be asked to indicate whether you are happy for us to contact your referees directly should they not provide a reference by the stated closing date.
Should you experience any difficulties using the online application system, please email recruitment.support@admin.ox.ac.uk

To return to the online application at any stage, please click on the following link www.recruit.ox.ac.uk

Please note that you will be notified of the progress of your application by automatic e-mails from our e-recruitment system. **Please check your spam/junk mail** regularly to ensure that you receive all e-mails.