



University of Oxford, Department of Computer Science

Job description and selection criteria

Job title	Web Application Developer
Division	MPLS
Department	Computer Science
Location	Wolfson Building, Parks Road, Oxford, OX1 3QD
Grade and salary	Grade 7: starting salary £30,434 - £37,394 (with a discretionary range to £40,847)
Hours	Full-time
Contract type	Fixed term contract for up to 12 months
Reporting to	Geoff Williams and Professor David Gavaghan

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, readers, 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 2011/12 was £1,016.1m. Oxford is one of Europe's most innovative and entrepreneurial universities: income from external research contracts exceeds £409m 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, making it one of the longest-established Computer Science departments in the country. 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. The Department is housed across multiple sites within the University's South Parks Road Science area, facilitating strong collaborative links with research groups and institutes in closely allied areas (including the Oxford Internet Institute and the Oxford e-Research Centre). 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 (Professor Sadie Creese leads a new Cybersecurity Centre), protocol analysis, trusted computing, networking, and human-centred computing;

- *Automated Verification* (led by Professor Marta Kwiatkowska) covers probabilistic and software model checking (Professor Daniel Kroening), time and concurrency (Professor Joel Ouaknine, Professor James Worrell, and Professors Roscoe and Lowe), and hardware (Professor Tom Melham);
- *Computational Biology* (led by Professor David Gavaghan, and including Professors Kevin Burrage and Helen Byrne) is one of the world's leading groups building computational models of biological systems, and is particularly well-known for its work on the heart;
- *Foundations, Logic and Structures*, (leader Professor Samson Abramsky) which includes groups working on quantum information and computation (Professors Samson Abramsky and Bob Coecke), game semantics and verification (Professor Luke Ong), and constraints (Professor Peter Jeavons);
- *Information Systems* (led by Professor Ian Horrocks, and including Professor Michael Benedikt) has groups working on databases, knowledge representation and reasoning, and computational linguistics (Professor Stephen Pulman);
- *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	Computational Science
Principal Investigator / supervisor	Professor David Gavaghan
Funding partner	EPSRC

Overview of the role

The University of Oxford, University College London and Microsoft Research, Cambridge received funding from the EPSRC Cross-Disciplinary Interfaces Programme (C-DIP) for a programme of research involving up to 17 post-doctoral fellowships over a five year period. The 2020 Science programme is focused on fostering the creation of a new generation of future scientific leaders – new kinds of scientists with the ability to lead the way in tackling fundamental challenges in science in areas of societal importance. At the heart of the programme is the development and application of computational tools and novel approaches to the scientific computing, scientific software development and software engineering that underpin the development of predictive models of complex, multi-scale natural systems.

Further information on the 2020 Science programme and its scientific remit can be found at www.2020science.net .

The position

Currently a number of the programme's research areas are expanding their research outputs by providing web interfaces to their developed applications in order to showcase their work, to engage with wider research communities, and to support future applications for funding. There are already two established web applications derived from earlier activities which are currently hosted by the Computational Biology group in the Dept. of Computer Science (

<https://chaste.cs.ox.ac.uk/FunctionalCuration/>, <https://chaste.cs.ox.ac.uk/ActionPotential/>), one of which has also been embedded within large commercial organisations. These require ongoing maintenance and development. This increasing momentum has provided an opportunity to expand the programme's web development team with the aim of contributing to the longevity and accessibility of current and future research.

Overall we are looking for a supportive and comprehensible software engineer with the following:

- A good breadth of understanding of both open source software and web technologies;
- The flexibility to be able to participate effectively in a number of areas of web application development;
- An enthusiasm to learn new technologies quickly.

Selection Criteria

Responsibilities/duties

The primary role of the post holder will be to work closely with the senior web application developer, Geoff Williams, in the specification, creation and support of a number of web applications through the full software development life-cycle and in all aspects of N-tier application architectures. The individual web applications will vary in complexity and development time, but all will involve working efficiently with a number of researchers and project collaborators (including commercial users) across the spectrum of projects within the 2020 Science programme. All software developed by the post-holder will be open source material and version-controlled by Git.

To achieve the requirements of the role, the post holder will be expected to:

- Quickly understand and adopt the working practices and methods already employed on established projects within the 2020 Science programme.
- Oversee any new web application development projects within the 2020 Science programme and work with the Senior Web Application Developer and Project Manager to plan, prioritise, and resource these projects.
- Actively engage with researchers and collaborators to quickly gain an understanding of both their scientific subject domain and the computational techniques they use.
- Draw upon the post-holder's own knowledge and technical expertise to communicate the sometimes complex technical options available to fellows and collaborators and propose and develop suitable solutions.
- Regularly and effectively interact with 2020 Science fellows and their academic, scientific and industry collaborators to collect and modify requirements, update implementations, and demonstrate their use.
- Understand and analyse complex, highly technical information or communications and be able to convey the implications of this information to a range of users with varying degrees of technical knowledge

- Scope and appraise new or alternative technologies where required to determine their suitability on a project by project basis, particularly in developing areas such as data visualisation.
- Participate in the predominantly Linux administrative work involved in hosting the web applications, i.e., the configuration of services, installation of prerequisite libraries, hardware and software specifications and job management.
- Occasionally travel to events and external collaborators for team meetings, to gather user requirements, or to present technical aspects of the design and implementation of the web interfaces.
- Provide suitable technical documentation for each of the web application projects assigned to and contribute to any technical or user manuals as needed.
- Apply an iterative development process, allowing improved versions of the application to be tested by users and modified requirements to feed back into the next version.

Essential criteria:

Experience:

- Web application development experience using open source technologies, including Linux.
- Recent Java development experience, involving active use of Spring 3+ (Core, Integration, Web, Web Services, Security, Test).
- Interfacing technologies: JSP; HTML; CSS; AJAX; JSON; and Javascript, including libraries such as jQuery, D3, Flot.
- Demonstrable experience of working across a range of technical systems, which will include a range of the following, together with the demonstrable interest and ability to learn new technologies:
 1. Unit, Integration testing and code coverage, e.g. junit, EasyMock.
 2. Ant, Maven build tools.
 3. Version control systems, e.g. Subversion, Git.
 4. Web services.
 5. Web application security issues, e.g. OWASP.
- Experience of carrying out iterative user testing processes to identify and implement system developments

Skills:

- A highly effective communicator with the ability to convey complex technical information in an appropriate form to a range of stakeholders and be confident in persuading stakeholders of appropriate technical solutions.
- Proven ability to plan, organise and prioritise work at an individual and team level, especially while working on multiple projects simultaneously
- Ability to investigate, analyse and interpret a range of complex technical information and apply this to the web application development process
- Ability to work independently, innovatively and creatively and in a way which positively adapts to change.

Desirable criteria:

- Linux web server service configuration and provision, e.g. Apache, Tomcat/Jk, firewalls, databases, virtual machines.
- Hibernate ORM.
- Apache Tiles (or similar).
- TCP/IP protocols (DNS, SMTP, FTP, HTTP, etc.)
- Windows 7 / 8 / PuTTY use.
- XML technologies, e.g. XSLT, XPath, SVG.
- C/C++ application compiling / linking.
- PHP, Python and Perl development.
- High Performance Computing.
- Eclipse (or similar) IDE use.
- Continuous integration, e.g. Jenkins.
- Familiarity with an academic/research environment.
- Design Patterns.

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 post, which is a fixed term appointment for up to 12 months, has a salary on the University grade 07S scale, currently £30,434 - £37,394 (with a discretionary range to £40,847), 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). Requests for appointment on a part time or flexible basis will be considered.

The University is a family friendly employer and offers a number of benefits detailed at <http://www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/>

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:

1. A full curriculum vitae;
2. A letter, referred to as the supporting statement, explaining how you meet the requirements of the post.

*****Please note two references must also be received by the closing date.*****

The supporting statement should describe how you meet the selection criteria outlined above. 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 job11@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.

Potential candidates are welcome to contact Geoff Williams geoff.williams@cs.ox.ac.uk to discuss the role informally before making a formal application.