



University of Oxford Department of Computer Science

## Job description and selection criteria

<b>Job title</b>	Researcher
<b>Division</b>	MPLS
<b>Department</b>	Computer Science
<b>Location</b>	Wolfson Building, Parks Road, Oxford.
<b>Grade and salary</b>	Grade 8: Salary £37,012 - £44,166 p.a.
<b>Hours</b>	Full Time
<b>Contract type</b>	Fixed Term Contract up to 3 years (with the possibility of extension)
<b>Reporting to</b>	Professor Daniel Kroening

## 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 21,000.

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 5,900 'academic-related' staff (postgraduate research, computing, senior library, and administrative staff) and 2,820 '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 2009/10 was £879.8m. Oxford is one of Europe's most innovative and entrepreneurial universities: income from external research contracts exceeds £367m p.a., and more than 60 spin-off companies have been created.

For more information please visit [www.ox.ac.uk](http://www.ox.ac.uk)

## MPLS Division

The academic administration of the University is conducted through four divisions (Humanities, Social Sciences, Mathematical, Physical and Life Sciences, and Medical Sciences). The Mathematical, Physical and Life Sciences Division consists of ten constituent departments: the Department of Chemistry, Department of Computer Science, the Department of Earth Sciences, the Department of Engineering Science, the Department of Materials, Mathematical Institute, the Department of Physics, Department of Plant Sciences, Department of Zoology and Statistics. The division provides a framework for interdisciplinary teaching and research. There are also links with the Medical Sciences Division.

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

## Department of Computer Science

The Department of Computer Science, University of Oxford has one of the longest-established Computer Science departments in the country. Formerly known as the Oxford University Computing Laboratory, it is home to a community of world-class research and teaching. Research activities encompass core Computer Science, as well as computational biology, quantum computing, computational linguistics, information systems, software verification and software engineering. The department is home to undergraduates, full-time and part-time Master's students, and has a strong doctoral programme.

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

## Job description

<b>Research topic</b>	Automated Formal Verification
<b>Principal Investigator / supervisor</b>	Professor Daniel Kroening
<b>Funding partner</b>	EPSRC

The Verification Group is offering a post for a Grade 8 Research Assistant to work on the automated methods for formal verification of software under the direction of Daniel Kroening in the Department of Computer Science, University of Oxford. Applicants should have (or shortly expect to receive) a PhD in Computer Science or a closely related field. The post offers scope for both theoretical and applied work; candidates of either inclination will be considered.

Candidates with applied focus should demonstrate strong programming and systems skills, experience of tool construction, and knowledge of program analysis. Candidates with a background in theoretical computer science should be able to demonstrate experience with automata theory, abstract interpretation, model checking or decision procedures.

Candidates with a background in one of the following areas are especially encouraged to apply:

- embedded systems
- unmanned aerial vehicles (UAVs)
- validation of evolving software

- operating system kernels
- shared-variable concurrency

The work will take place within the Verification group in the Department of Computer Science, University of Oxford, which comprises, in addition to the investigator, world-leading experts in software verification and model checking such as Marta Kwiatkowska, Tom Melham, Luke Ong, and Bill Roscoe.

## **Main Duties and Responsibilities**

The main duties of the successful candidate will include:

- Provide leadership for the research aspects of verification groups projects as a whole in interaction with research staff at partner organisations;
- Direct a junior research assistant and a doctoral student who are associated with the project by setting goals and managing the resources available;
- Direct MSc-level graduate students on related projects.
- Present results at international conferences and grant review meetings;
- Write publications at the standard of the internationally leading venues;
- Raise research funds through grant applications and manage own area of a larger research budget;
- Develop and implement new research methodologies and materials;
- 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;
- Share responsibility for shaping the research group's plans and the writing of group-funding applications for new research projects.

## **Selection Criteria**

### **Essential**

- A doctoral degree in computer science or a closely related discipline;
- A substantial track record of high-quality publications in internationally leading venues in an area related to automated formal verification (such as CAV, TACAS, POPL, PLDI);
- Possess sufficient specialist knowledge in the discipline to develop research projects and methodologies.
- Good verbal and written communication skills in English

### **Desirable:**

- Experience of applying formal analysis tools in an industrial context;
- A track record advising the research of doctoral students;
- A track record of writing successful applications for research funding;

- Documented experience of independent lecturing.

## 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/](http://www.ox.ac.uk/about_the_university/jobs/research/)

### Salary and Benefits

This post is a full time appointment and is available initially for 3 years (with the possibility of extension). The post has a salary on the University grade 08 scale, currently £37,012 - £44,166 p.a. (with a discretionary range of up to £48,096 for an exceptional candidate). This will include 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 [job07@cs.ox.ac.uk](mailto:job07@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.

Should you experience any difficulties using the online application system, please email [recruitment.support@admin.ox.ac.uk](mailto: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](http://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.