



DEPARTMENT OF  
**COMPUTER  
SCIENCE**



University of Oxford Department of Computer Science

## Job description and selection criteria

<b>Job title</b>	Researchers (two posts)
<b>Division</b>	MPLS
<b>Department</b>	Computer Science
<b>Location</b>	Oxford Martin School, 34 Broad Street, Oxford OX1 3BD
<b>Grade and salary</b>	Grade 8: Salary £37,382 – £44,607 p.a.
<b>Hours</b>	Full Time
<b>Contract type</b>	Fixed term until 31 <sup>st</sup> March 2015

## 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 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). Many members of the Department are active in externally sponsored research, with both government and industrial funding. At present there are 52 members of academic staff and over 80 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 £37m in external research contracts.

Research in DoCS is currently managed in seven themes. *Software Engineering* (led by Professor Jim Davies), works on a wide variety of areas including e-Science and model-driven development; *Programming Languages* (led by Professor Jeremy Gibbons and including Dr Ralf Hinze and Professor Oege de Moor); Security (leader Professor Bill Roscoe, with Professor Sadie Creese leading a new Cyber Security Centre, and Professor Gavin Lowe); *Verification* (leader Professor Marta Kwiatkowska) covering probabilistic and software model checking (Professor Daniel Kroening) with time and concurrency (Professor Joel Ouaknine, Professor James Worrell, and Professors Roscoe and Lowe), and automated verification of 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; and *Foundations, Logic and Structures*, (leader, Professor Samson Abramsky) which includes groups working on quantum information and computation (Abramsky and Professor Bob Coecke), game semantics and verification (Professor Luke Ong) and constraints (Professor Peter Jeavons); *Information Systems* (jointly led by Professors Georg Gottlob and Ian Horrocks and including Professor Stephen Pulman, who works on Computational Linguistics, and Professor Michael Benedikt). In addition the department has recently recruited Professors Mike Wooldridge (Agent Based Systems) and Elias Koutsoupias (Algorithms). A realignment of the themes is expected shortly.

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

## **Oxford Martin School**

The Oxford Martin School is a unique interdisciplinary community within the University of Oxford. It was founded in 2005 through the vision and generosity of James Martin. It works across the University's four academic divisions and currently comprises over 435 interdisciplinary research programmes on global challenges, clustered under four broad themes of: Energy & Environment; Health & Medicine; Technology & Society; and Ethics & Governance. The School is committed to advancing innovative, interdisciplinary research that will harness opportunities and yield solutions to some of the world's greatest challenges.

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

## **Job description**

<b>Research topic</b>	Global Centre for Cyber-Security Capacity Building
<b>Principal Investigator / supervisor</b>	Professor Sadie Creese
<b>Funding partner</b>	FCO

## Overview of the role

The Cybersecurity Group at the Department of Computer Science is looking to employ two Research Fellows to work in a UK Government-funded collaborative research centre on cyber-security capacity-building. The Centre will be located at the Oxford Martin School, which specialises in supporting interdisciplinary research communities working to address the most pressing global challenges and opportunities of the 21<sup>st</sup> century. The Centre's aim is to understand and communicate how best to deliver effective cyber security both within the UK and across the world. We will make this knowledge available to governments, communities and organisations to underpin an increase of their capacity in ways appropriate to ensuring a cyber space which can continue to grow and innovate in support of well-being, human rights and prosperity for all.

This is an exciting opportunity for an experienced researcher with a strong methodological and/or theoretical background in one of the social sciences or physical sciences or humanities, for example economics, political science, computer science, philosophy, cognitive or social psychology, law, geography, anthropology, international relations, development or sociology; and with an interest in research which matches one or more of the Centre's dimensions of capacity.

The focus of these posts will be to support the data-gathering, synthesis and knowledge-generation activities of the Centre, that in particular focus on five dimensions of capacity-building activities:

- National and international policy, and our ability effectively to deter and to defend against cyber attacks.
- Society, culture and the susceptibility of people to cyber crime, and their views on what is acceptable in terms of apportioning responsibility for cyber risk and the use of cyber-security tools.
- The availability of a high-quality cyber-security-skilled workforce and leadership, across the public, private and voluntary sectors, and the underpinning educational and training platforms required to develop and support them.
- The legal and regulatory environments at large and their ability to stimulate good cyber-security practice and generally to increase the resilience of cyber space and the people and organisations dependent upon it.
- Availability and use of technology, processes, business models and standards to support control of cyber risk in the home, in the enterprise, across national critical infrastructures and across international cyberspace.

More details about the Cyber-Security Capacity-Building Centre can be found at: <http://www.oxfordmartin.ox.ac.uk/institutes/cybersecurity>

## Responsibilities/duties

The main duties of the successful candidates will include:

- To take responsibility for the execution of the research plan as defined in the description of work and as evolved by the Technical Board (which consists of all academics leading the Centre including those from outside Oxford). This will include:
  - Identification of global cyber-security capacity-building expertise.
  - Co-ordination of primary data collection exercises and fieldwork.

- Development of written examples and case studies of cyber-security capacity-building experience.
- Development of the cyber-security capacity capability maturity model with particular focus on two specific dimensions but also with consideration of the whole.
- Supporting the convening of meetings of the working groups around each dimension and synthesising the ideas and knowledge generated within the working groups.
- Developing knowledge-transfer collateral in the form of written documents and downloadable media, and population of the Centre's website.
- To provide leadership for the research aspects of the project as a whole in interaction with the lead academics and members of dimensions' working groups.
- To provide world-leading expertise in the area of cyber-security capacity-building through a proven track record of research in one or more of the dimensions of focus for the Centre.
- To build the profile of the Centre through public engagements and publications in peer-reviewed journals, books and other major high-quality publication outlets
- To help direct students and interns who are associated with the project by setting goals and managing the resources available.
- To present results at international conferences, meetings with international stakeholders and grant review meetings.
- To participate actively in the Centre's programme of seminars and events, including those aimed at non-academic audiences.
- To participate in Centre administration, as required.
- To develop and implement new research methodologies and materials.
- To develop research questions within a specific context, to conduct individual research, analysing detailed and complex qualitative and/or quantitative data from a variety of sources, and to generate original ideas by building on existing concepts.
- To share responsibility for shaping the Centre's plans and the writing of funding applications as part of sustainability-planning exercises.

The successful applicants will eventually be based in the Oxford Martin School, at 34 Broad Street, Oxford OX1 3BD. They will be both staff members of Computer Science and Oxford Martin Fellows. Whilst working with Professor Creese in a day-to-day capacity, depending upon their particular areas of expertise, the Fellows will be expected to focus on supporting two dimensions of the Centre's work along with the senior academics directing those dimensions: who include from the Saïd Business School (Prof Upton), Oxford Internet Institute (Prof Dutton and Dr Brown), Blavatnik School of Government (Dr Toft) and Computer Science (Prof Goldsmith, and Dr Martin) at the University of Oxford; and also Prof Sasse of UCL, Prof Cornish of Exeter University, Prof Piper of Royal Holloway University of London and Prof Gercke of the Cybercrime Research Institute. Applicants must therefore be keen to work as part of a collaborative interdisciplinary team, be exceptionally able to deal with change and to learn about areas of cyber security not immediately within their domain of expertise, be prepared to work across all dimensions and beyond as required ,and be keen and able to travel.

## **Selection Criteria**

### **Essential:**

- Theoretical and methodological grounding in one or more disciplines relevant to the dimensions of cyber-security capacity being studied by the Centre;

- A distinguished research record in a relevant area with publication of articles in high-impact refereed journals;
- Sufficient specialist knowledge in their discipline to develop research projects and methodologies;
- A proven track record of methodologically or theoretically innovative research;
- Proven ability to work effectively with colleagues as part of a professional team;
- Ability to disseminate results of research to a variety of audiences;
- Willingness to participate in collaborative, multi-disciplinary research projects;
- Experience of research-planning and organisation;
- Excellent communication and writing skills.

#### **Desirable:**

- Experience of cyber-security capacity-building activities;
- Experience of multi-disciplinary working;
- Proven ability to teach and supervise postgraduate students and undergraduate projects;
- A track record of writing successful applications for research funding.

## **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**

The posts, which are full time appointments, are funded by the FCO, and are available until 31<sup>st</sup> March 2015. The salary is on the University grade 08S scale (currently £37,382 - £44,607 p.a.). 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](mailto: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](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.