Job description and selection criteria

Summary

Job title	Postdoctoral Researcher in Machine Learning and Cancer
Division	Medical Sciences
Department	Nuffield Department of Women's & Reproductive Health
Location	Nuffield Department of Women's & Reproductive Health, Big Data Institute, Li Ka Shing Centre for Health Information and Discovery, Old Road Campus, OX3 7LF
Grade and salary	Grade 7: £36,024 to £44,263 (with a discretionary range to £48,350) per annum
Hours	Full time *Applications for flexible working arrangements are welcomed and will be considered in line with business needs.*
Contract type	Fixed-term for 12 months.
Reporting to	Christopher Yau, Professor of Artificial Intelligence
Vacancy reference	173663
Additional information	*Fixed-term for 12 months but must end by 31st December 2025. The post is available from 1st October 2024.*

The role

We invite applications for the position of a Postdoctoral Researcher in Machine Learning and Cancer to join the research group of Professor Christopher Yau (http://cwcyau.github.io) which is based within the Big Data Institute at the University of Oxford.

The position is embedded within a research programme funded as part of a UKRI Turing AI Fellowship (https://www.ukri.org/news/new-turing-ai-fellows-to-deliver-world-class-ai-research/). The role will focus on the development of state-of-the-art machine learning approaches for the analysis of spatial sequencing data of cancers in collaboration with the Jamieson Group at the University of Glasgow (https://www.spatiallab.org/our-team). This is a unique opportunity to develop and apply AI to tackle key questions in cancer research.

This is an ideal opportunity for soon-to-complete or recent doctoral graduate seeking to switch disciplines into machine learning. An interest in biology or medicine is essential. You should be self-motivated, diligent and able to work individually or collaboratively.

You will have a PhD in a quantitative subject (e.g. mathematics, physics, computer science, engineering) and possess experience of developing computational models.

Responsibilities

- Develop probabilistic modelling and/or machine learning methods.

- Work closely with academic partners to develop machine learning methods for the analysis of spatial sequencing data.

- Produce well-documented open-source code implementing algorithms for general use adhering to established frameworks for best practice in research software engineering.

- Understand and apply rigorous standards of open and transparent reporting in production of scientific publications.

- To be able to present their research outcomes to a range of stakeholder groups, including public and patient groups and scientific conferences.

- Learn and implement best practice for collaboratively effectively with internal staff and external stakeholders in achieving research goals and understand the importance of embedding equality, diversity, and inclusion issues in our work.

- Work closely with the Principal Investigator to develop and eventually apply project management skills in the implementation of this project

- Develop and eventually apply person management skills to supervise other staff or research students

Selection criteria

You will be asked to upload a CV and supporting statement as part of your online application.

Applications will be judged only against the criteria that are set out below. Applicants should ensure that their application shows very clearly how their skills and experience meet these criteria within the supporting statement. This should describe, with specific examples, how you meet each item listed below. See https://www.jobs.ox.ac.uk/cv-and-supporting-statement for further guidance on writing an effective supporting statement.

Essential selection criteria

1. A PhD (or equivalent) or near completion of a PhD with a significant mathematical and/or computational element, e.g. in Mathematics, Computer Science, Engineering, Physics or Statistics

2. Experience of probabilistic modelling and/or machine learning

3. Experience of scientific programming

4. Strong interest in medicine and biology

5. Strong scientific publication record relative to career stage

6. Motivated to engage with the public and patients in their research

7. Self-motivated, diligent and able to work in a team

8. Excellent organisational and communication skills

9. Fluent communicator in written and spoken English

Desirable selection criteria

Please note that the criteria listed below would be an advantage in this role, but you do not need to meet them to be eligible to apply.

1. Strong knowledge and understanding of probabilistic modelling.

2. Knowledge of state-of-the-art machine learning approaches, particularly using Deep Neural Networks, such as variational autoencoders, amortised learning, normalising flows, etc.

3. Experience of writing probabilistic modelling software in Python.

4. Experience of implementing software using Deep Learning frameworks (e.g. Tensorflow, PyTorch)

5. Experience of developing bioinformatics methods for single-cell transcriptomics.

6. Experience of using a High Performance Computing (HPC) environment.

7. Experience of best practice for modern software development (e.g using version control, i.e. GitHub, snakemake, etc)

Pre-employment screening

Standard checks

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: https://www.jobs.ox.ac.uk/pre-employment-checks

About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit www.ox.ac.uk/about/organisation.

Nuffield Department Women's & Reproductive Health (NDWRH)

NDWRH has a long-standing interest in the fields of reproductive medicine (including developmental biology), gynaecological oncology and maternal/perinatal health. There are approximately 110 people working in the department, including senior academic staff, research support staff, clerical and technical staff, and graduate students (including clinicians) carrying out research towards a higher degree. There are also a number of visiting researchers from many parts of the world. The average annual expenditure is approximately £8.0 million, of which over 75% comes from outside sources.

The Nuffield Department Women's & Reproductive Health (NDWRH) encompasses multi-disciplinary research across the full spectrum of women's health. Our work has four overarching themes; Cancer, Global Health, Maternal & Fetal Health and Reproductive Medicine & Genetics. We focus on genetic studies, the dissection of molecular, biochemical and cellular mechanisms underlying normal and aberrant reproductive tissue function, clinical studies in women's health and pregnancy and growth and development across the first 1000 days of life. The Department also now includes The George Institute for Global Health (TGI) whose mission is to increase access to quality health care for millions of people worldwide - with a particular focus on vulnerable women in resource poor settings.

The clinical and laboratory programmes are based in the Women's Centre and there are collaborations with the School's Institutes, the University's Science Departments and with researchers outside Oxford, in the UK and abroad. In addition, the research activities of the department have been enormously enhanced over many years as a result of the partnership with the Oxford Fertility Unit (based in the new Institute of Reproductive Sciences), which has led to the creation of an MSc in Clinical Embryology.

For more information please visit: http://www.obs-gyn.ox.ac.uk/

The University of Oxford is a member of the Athena SWAN Charter and holds an institutional Bronze Athena SWAN award. The Nuffield Department Women's & Reproductive Health holds a departmental Silver Athena SWAN award in recognition of its efforts to introduce organisational and cultural practices that promote gender equality in science, engineering and technology (SET) and create a better working environment for both men and women.

Medical Sciences Division

The Medical Sciences Division, within which the Nuffield Department Women's & Reproductive Health is located, is an internationally recognized centre of excellence for biomedical and clinical research and teaching. We are the largest academic division in the University of Oxford. World-leading programmes, housed in state-of-the art facilities, cover the full range of scientific endeavour from the molecule to the population. With our NHS partners we also foster the highest possible standards in patient care. For more information please visit: http://www.medsci.ox.ac.uk/

How to apply

Assessment

Interviews for this post will take place in mid-August 2024. You will be notified by Friday 9th August if you have been shortlisted for interview.

During the interview, you will be asked questions based around the selection criteria listed in this job description.

If you are selected for interview you will be invited to disclose any special requirements which we might need to consider in relation to the interview arrangements, for example, in the case of disability, access to facilities or equipment. These will not be taken into account in the selection process.

In advance of the interview, you will be asked to complete an online McQuaig Word Survey. You can read more about McQuaig at https://mcquaig.co.uk/candidate-section/.

You will also be asked to prepare a short presentation / complete a test. Details of these will be provided to selected candidates.

You can find more information and guidance about the recruitment and selection process at the Nuffield Department of Women's & Reproductive Health at https://www.wrh.ox.ac.uk/candidate-briefing.

Applications are made through our online recruitment portal. Information about how to apply is available on our Jobs website https://www.jobs.ox.ac.uk/how-to-apply.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application you will be asked to provide details of two referees and indicate whether we can contact them now.

You will be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants)

Please upload all documents **as PDF files** with your name and the document type in the filename.

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

Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing department(s).

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

If you need help

Application FAQs, including technical troubleshooting advice is available at: https://staff.web.ox.ac.uk/recruitment-support-faqs

Non-technical questions about this job should be addressed to the recruiting department directly at recruitment@wrh.ox.ac.uk

To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.

Important information for candidates

Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at: https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy. The University's Policy on Data Protection is available at: https://compliance.admin.ox.ac.uk/data-protection-policy.

The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82**, which with effect from 1 October 2023 will be 30 September before the 70th birthday. The justification for this is explained at: https://hr.admin.ox.ac.uk/the-ejra.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: https://hr.admin.ox.ac.uk/the-ejra.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

Equality of opportunity

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. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

Benefits of working at the University

Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See https://hr.admin.ox.ac.uk/staff-benefits

University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See www.club.ox.ac.uk and https://www.sport.ox.ac.uk/.

Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See https://welcome.ox.ac.uk/

There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependants. See https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme

Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to the Work+Family Space, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See https://hr.admin.ox.ac.uk/my-family-care

The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries.

For full details, including how to apply and the costs, see https://childcare.admin.ox.ac.uk/

Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see https://edu.admin.ox.ac.uk/disability-support

Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at https://edu.admin.ox.ac.uk/networks

The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See www.newcomers.ox.ac.uk.