Summary

Job title	Postdoctoral Research Assistant in NLP and Social Network
Division	Mathematical, Physical and Life Sciences Division
Department	Engineering Science
Location	Oxford e-Research Centre, Central Oxford
Grade and salary	Grade 7: £36,024 - £44,263 per annum (Whilst the role is a Grade 7 position, we would be willing to consider candidates with potential but less experience who are seeking a development opportunity, for which an initial appointment would be at Grade 6: £32,332 - £38,205 per annum, with the responsibilities adjusted accordingly. This would be discussed with applicants at interview/appointment where appropriate).
Hours	Full time
Contract type	Fixed-term until 30 September 2024, externally-funded
Reporting to	Professor Janet Pierrehumbert and Professor Xiaowen Dong
Vacancy reference	170054
Additional information	Reimbursement of relocation costs for postdoctoral positions is only available where allowed on the project.

Research topic	Natural Language Processing and Graph Neutral Networks for Social Media
Principal Investigator / supervisor	Professor Janet Pierrehumbert and Professor Xiaowen Dong
Project team	Collaboration between the Oxford e-Research Centre (Pierrehumbert) and the Oxford-Man Institute (Xiaowen Dong).
Funding partner	The funds supporting this research project are provided by UK EPSRC: Responsible Natural Language Processing for Intelligent Interfaces

The role

Overview of the project

We are looking to hire a Postdoctoral Research Assistant for on our project on exaggeration, cohesion, and fragmentation in on-line forums. This interdisciplinary project, led by Professor Janet Pierrehumbert (Oxford e-Research Centre) and Professor Xiaowen Dong (Oxford Man Institute) is funded by the EPSRC

under its Responsible Natural Language Processing Programming. We are seeking a Postdoctoral Researcher to start as soon as possible, and work through the end of the project on 30 September 2024.

This project aims to advance the ability of Natural Language Processing algorithms to understand words and phrases that express a degree on a scale (such as "sometimes", "often", "always") and simultaneously to use graph neural networks to understand how scalar claims are promulgated and modified in social networks. We are particularly interested in developing novel machine learning methods that integrate linguistic information with social network information, in order to make predictions about the degree of polarization and fragmentation.

Overview of the role
The postholder will assume a leadership role in the design and testing of a benchmarking suite and/or novel software for the project (with the balance of these aspects of the work depending on their background and skills). You are expected to be an active and constructive participant in regular project meetings. You will also provide guidance to less experienced members of the research team, including postgraduate students and research assistants.

The Postdoctoral Researcher may have the opportunity to undertake ad-hoc paid teaching (this includes lecturing, demonstrating, small-group teaching, tutoring of undergraduates and graduate students and supervision of master's projects in collaboration with principal investigators). Permission must be sought in advance for each opportunity and the total must not exceed 4 hours a week.

This post also includes money for travel to present any first-authored publications at a suitable conference taking place before the end date of the project.

Responsibilities
- Text-mining social media data to identify linguistic or social factors related to the goals of the project.

- Determine the performance of currently available machine learning algorithms for language inference tasks (such as entailment and contradiction) and/or social network prediction tasks.

- Contributing to the design of a crowd-sourcing experiment to probe how people interpret scalar expressions in their social context, adapting and improving on protocols in the research literature.

- Organising results for open

- -access distribution.

- Documenting the project findings in publications and in a guide to all datasets and software that are released.

- Manage own academic research and administrative activities. This involves small scale project management, to co-ordinate multiple aspects of work to meet deadlines.

- Contribute ideas for new research projects.

- Act as a source of information and advice to other members of the group on scientific protocols and experimental techniques.

- 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

- The researcher may have the opportunity to undertake ad-hoc paid teaching (this includes lecturing, demonstrating, small-group teaching, tutoring of undergraduates and graduate students and supervision of masters projects in collaboration with principal investigators). Permission must be sought in advance for each opportunity.

- Any other duties appropriate with the role.

Selection criteria

Essential selection criteria

- Hold a relevant PhD/DPhil or be near completion* (with the possibility to underfill if candidate holds relevant first degree and is working towards a PhD/DPhil), together with relevant experience.

- Sufficient knowledge of the applications area to 1) analyse posts according to the types of meanings and relationships involved 2) evaluate the results of human judgments or machine learning algorithms, including both overall accuracy and error patterns.

- Excellent communication skills, including the ability to write for publication, present proposals and results, and represent the research group at conferences.

- Good programming skills in Python, including the ability to install and run open-source software, such as scikit-learn or software distributed by HuggingFace.

- Ability to manage time effectively to meet deadlines for project reporting, conference submissions, and responses to reviews.

- Ability to manage own academic research and associated activities.

please note that 'near completion' means that you must have submitted your PhD thesis.

Desirable selection criteria

- Experience of collecting data from human participants, including both experimental design and human ethics policies.

- Experience applying large pretrained language models (such as BERT, GPT2, BART, or CHINCHILLA) to NLP tasks such as question-answering, topic classification, stance detection, or sentiment analysis.

- Knowledge of state-of-the-art machine learning techniques (e.g. graph neural networks) for network-structured data.

- Experience using social networks, conceptual graphs, or other complex data structures in the context of NLP and/or social data science.

- Experience setting up and running on-line experiments.

- Experience in efficient use of a high-performing computing cluster.

- Experience in independently managing a discrete area of a research project

- Experience in actively collaborating in the development of research articles for publication, especially in the areas of NLP, experimental semantics, and/or graph neural networks.

- Ability to contribute to ideas for future research directions and for generating research income.

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.

Engineering Science Department

Engineering teaching and research takes place at Oxford in a unified Department of Engineering Science whose academic staff are committed to a common engineering foundation as well as to advanced work in their own specialties, which include most branches of the subject. We have especially strong links with computer science, materials science, medicine and also the Saïd Business School. The Department employs 120 academic staff (this number includes 13 statutory professors appointed in the main

branches of the discipline, and 25 full professors); in addition, there are nine visiting professors. There is an experienced team of teaching support staff, professional services and administrative staff and technicians. The Department has well-equipped laboratories and workshops, which together with offices, lecture theatres, library and other facilities have a net floor area of about 25,000 square metres.

The Department is ranked fifth in the world, and the top European University, in the 2023 *Times Higher Education World University Rankings* for Engineering & Technology. Further information about the Department is available at www.eng.ox.ac.uk.

Teaching
We aim to admit 170-180 undergraduates per year to take a 4-year course leading to the MEng degree in Engineering Science. The course is accredited at MEng level by the major engineering institutions. The syllabus has a common core extending through the first two years. Specialist options are introduced in the third year, and the fourth year includes further specialist material and a major project.

Research
Research in the Department is particularly strong. We have approximately 600 research students and about 250 postdoctoral researchers. Direct funding of research grants and contracts, from a variety of sources, amounts to an annual turnover of approximately £70m.

The results of the seven-yearly UK-wide assessment of university research, REF2021, published on 12th May 2022, demonstrate that the University of Oxford made the highest volume of world-leading research submissions. The Department of Engineering Science had 71% of submissions which met the requirements for the highest grading of 4*(research that is world-leading in terms of originality, significance, and rigour).
Research activities fall into 8 broad headings, though there is much overlapping in practice: Information Engineering (Robotics, Computer Vision and Machine Learning); Control; Thermofluids; Materials and Mechanics; Civil and Offshore; Electrical and Optoelectronic; Chemical and Process; and Biomedical.

The Department of Engineering Science holds a bronze Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

The Mathematical, Physical, and Life Sciences Division
The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University. In the results of the six-yearly UK-wide assessment of university research, REF2014, the MPLS division received the highest overall grade point average (GPA) and the highest GPA for outputs. We received the highest proportion of 4* outputs, and the highest proportion of 4* activity overall. More than 50 per cent of MPLS activity was assessed as world leading.

The MPLS Division's 10 departments and 3 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. Our research addresses major societal and technological challenges and is increasingly focused on key interdisciplinary issues. MPLS is proud to be the home of some of the most creative and innovative scientific thinkers and leaders working in academe. We have a strong tradition of attracting and nurturing the very best early career researchers who regularly secure prestigious fellowships

We have around 6,000 students and play a major role in training the next generation of leading scientists. Oxford's international reputation for excellence in teaching is reflected in its position at the top of the major league tables and subject assessments.

MPLS is dedicated to bringing the wonder and potential of science to the attention of audiences far beyond the world of academia. We have a strong commitment to supporting public engagement in science through initiatives including the Oxford Sparks portal (http://www.oxfordsparks.net/) and a large variety of outreach activities. We also endeavour to bring the potential of our scientific efforts forward for practical and beneficial application to the real world and our desire is to link our best scientific minds with industry and public policy makers.

For more information about the MPLS division, please visit: http://www.mpls.ox.ac.uk/

How to apply

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:
recruitment@eng.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 dependents. 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.