



UNIVERSITY OF LEEDS

## CANDIDATE BRIEF

Research Fellow in Geo-LLMs

Faculty of Engineering and Physical Sciences



**Salary: Grade 7 (£41,064– £48,822 p.a. depending on experience)**

**Reporting to: Anthony Cohn**

**Reference: EPSCP1180**

**Location: School of Computer Science (with scope for hybrid/remote working)**

**Fixed Term for 22 months full time, or up to 24 months part time from April 1 2026. Note that funding for a 2 year position is only available for an initial appointment at the bottom point of Grade 7. An appointment higher up the scale may be possible for a part-time position.**

**We are open to discussing flexible working arrangements.**



## Research Fellow in Geo-LLMs

### School of Computer Science

**Do you want to further your career in one of the UK's leading research intensive universities? Are you passionate about developing the fundamentals of AI in the context of applications to Geographical Information Science? Are you already skilled in the use and evaluation of (multimodal) Large Language Models (MLLMs)?**

Recent Artificial Intelligence (AI) research has given rise to a paradigm shift brought by Large Language Models (LLMs). Though LLMs arose from research in Natural Language Processing (NLP), it is well-known today that zero-shot and few-shot transfer learning methodologies as well as novel prompting strategies make their deployment possible beyond the NLP field, achieving impressive performance on a significant range of domains and downstream tasks. However, the deployment of LLMs in geographic information systems is still in its infancy. The Chist-ERA [Geo-R2LLM](#) project aims to create a novel paradigm for building knowledgeable and multimodal geographic LLMs by rethinking LLMs generation mode with retrieval and reasoning over multiple multimodal external knowledge sources to ground predictions. The improved multimodal geographic LLMs will be integrated in a geospatio-temporal AI (GeoAI) system prototype and evaluated on a pilot application related to context-aware navigation systems in a complex urban environment. Navigation services can be considered as one of the most critical and widely adopted location-based services in modern society, hence the project has potentially strong impact also outside of academia. This research will lead to fundamental advances in multiple disciplines spanning GeoAI, spatio-temporal reasoning, information retrieval, and natural language understanding, laying the groundwork for more effective AI platforms for various domains that relate to geography and geographical information science.

The [Geo-R2LLM](#) project consists of the [University of Toulouse 3, UT3-IRIT](#) (France) (coordinator), [Aalto University](#) (Finland), the [University of the Basque Country](#) (Spain), the [University of Leeds](#) and [Ghent University](#) (Belgium).

The University of Leeds is responsible for Work Package 2, and you will spend most of your time on this. WP2 will Identify types of spatio-temporal reasoning in geography, then extend the benchmark assessment developed in WP1 for spatio-temporal reasoning assessment of LLMs w.r.t. geographical properties.



It will also enhance the spatio-temporal reasoning abilities of LLMs by design novel prompting methodologies and by incorporating symbolic reasoners and perhaps fine-tuning. Thirdly, it will evaluate the resulting spatio-temporal reasoning abilities on assessment benchmarks. WP2 feeds into WP3 and WP4 by providing enhanced Geo-reasoning LLMs.

## What does the role entail?

As a Research Fellow, your main duties will include:

- Conducting evaluations of (Multimodal) Large Language Models ((M)LLMs) in the area of GIScience and spatial reasoning
- Enhancing (e.g. by fine tuning, prompting strategies, and neuro-symbolic methods) the performance of Geo-LLMs
- Developing frameworks and tools to conduct geo-LLM research, built to high software engineering standards.
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals and by presentation at national and international meetings;
- Working independently and as part of a larger team of researchers, both internally and externally, to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own research;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.



These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

## What will you bring to the role?

As a Research Fellow, you will have:

- A PhD in Computer Science or a closely allied discipline;
- A strong background and experience in API-based LLM use/evaluation;
- An excellent knowledge of Qualitative Spatial Reasoning;
- Excellent knowledge and substantial experience of Geographical Information Systems (GIS) software;
- A strong background in software engineering;
- A background, experience and knowledge of symbolic reasoning techniques, including neuro-symbolic methods;
- Good time management and planning skills, with the ability to meet tight deadlines and manage competing demands effectively without close support;
- A developing track record of peer-reviewed publications in international journals and conferences;
- Excellent communication skills both written and verbal, and the ability to communicate your research at national and international conferences;
- A proven ability to work well both independently and in a team;
- A strong commitment to your own continuous professional development.
- The willingness and ability to travel to partner organisations across Europe for project meetings.

You may also have:

- Experience of pursuing external funding to support research;
- Experience of dissemination of science to the public
- Experience of fine tuning LLMs
- Experience of research/project supervision





## How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23:59** (UK time) on the advertised closing date.

## Contact information

To explore the post further or for any queries you may have, please contact:

### **Prof Anthony (Tony) Cohn**

Tel: +44 (0)113 343 5482

Email: [a.g.cohn@leeds.ac.uk](mailto:a.g.cohn@leeds.ac.uk)

## Additional information

### **Faculty and School Information**

Further information is available on the research and teaching activities of the [Faculty of Engineering & Physical Sciences](#), and the School of [Computer Science](#).

### **Working at Leeds**

We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our [Working at Leeds](#) information page.

### **A diverse workforce**

As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.



The Faculty of Engineering and Physical Sciences are proud to have been awarded the Athena SWAN [Silver](#) Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our [equality and inclusion webpage](#) provides more information.

### **Information for disabled candidates**

Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our [How to Apply](#) information page or by getting in touch by emailing HR via [hr@leeds.ac.uk](mailto:hr@leeds.ac.uk).

## **Criminal Record Information**

### **Rehabilitation of Offenders Act 1974**

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

