



Call for Applications

Postdoctoral Researcher in “Models as Structured Data”

Summary

[Topos Institute](#) is searching for a **Postdoctoral Researcher** working on the theory and practice of compositional conceptual modelling, based in **Oxford, UK**. We are a non-profit research institute dedicated to shaping technology for public benefit. We use cutting-edge mathematical research, especially category theory, to develop new computational tools that shape the way information flows through science, technology, and society. Our goal is a world where the systems that surround us benefit us all. Our offices are located in Berkeley CA, USA and Oxford, UK.

- **Title:** Postdoctoral Researcher
- **Start date:** 1st of October 2024 at the earliest; 6th of January 2025 at the latest
- **Location:** Oxford, UK (required, but a transition period may be negotiated if desired)
- **Duration:** 1 year from start date*
- **Salary range:** £46,275–50,902

** Topos is looking to grow our UK team – while this position is currently funded by a 1-year project, selected candidates may have the opportunity for extension, or even to transition into a permanent role.*

Topos is committed to building a team with diverse perspectives and life experiences, so those with personal or professional backgrounds underrepresented at Topos are highly encouraged to apply. We are dedicated to shaping the future of technology to ensure a more equitable and just world, and we believe that a technology that supports a healthy society can only be built by an organisation that supports its team members. As such, Topos is committed to ensuring that its team members thrive in their work and home lives.

About the position

This is a 1-year postdoc with a possibility for extension to a second year, pending grant approval, and with opportunity for promotion into a permanent staff scientist role. We will be laying the groundwork for a compositional modelling framework allowing for collaborative design and validation of models on the firm formal basis of type theory and category theory.

In order to compose and manipulate formal models, we need to consider these models as structured data themselves – and not, as is so common in science, as just the code which runs

the model and the raw or loosely-structured data it runs on. Furthermore, modelling is a collaborative process; we develop and update models over time in response to new knowledge and new needs. To keep account of this process, we aim to develop a structure-aware version control system to operate on models as structured data.

In this post-doc, you will work with our researchers David Jaz Myers and Owen Lynch on the mathematics of structure-aware version control for formal models of systems. With our team, you will be:

- Developing and prototyping an open-standard data-serialisation format for models as structured data, with a theoretical basis in type theory and applied category theory.
- Developing the theory of structure-aware version control in tandem with a prototype implementation.
- Answering research questions which may arise during the above.

About you

We are looking for applicants who are interested in the theory of mathematical modelling and structure-aware version control. Our ideal candidate has (or will soon have) a PhD in, or has contributed substantially to, any of the following areas: type theory, logical relations and parametricity, database theory, category theory, version control.

Background in all of these areas is not necessary to be a good candidate, but a good candidate should be excited about working with us in all of these areas.

Eligibility criteria

Due to grant details, the intended start date for this position is the **1st of October 2024**, and it is an **in-person** role in **Oxford, UK**. However, we understand that moving to a new location takes time, and are offering the possibility of delaying the start to commence on any date **up until the 6th of January 2025**. There is also a possibility to start work remotely.

We are able to hire anyone with UK work rights. Furthermore, we are in discussion with visa sponsorship lawyers to see how we can extend our hiring capability beyond this. In brief, we guarantee the ability to hire anybody with the right to work in the UK, but **strongly encourage** applicants to apply **even if they do not meet this requirement** as we will work with any successful applicant to attempt to procure the necessary sponsorship licence.

Application process

To apply for this position, please email uk-jobs@topos.institute with the subject line “**Job Application (MaSD)**” and two PDF attachments:

1. a copy of your CV; and

2. a cover letter (roughly one A4 page) **including the contact details for two referees** who we can contact for letters of recommendation; please also include details about **your right to work in the UK or any visa requirements** that you have.

Your cover letter might describe your interest in the Topos Institute and this postdoc research position, your professional experience, your future goals, your specific experience with relevant mathematical research, and your potential contribution to a diverse and inclusive environment at Topos. Please feel free also to convey any information about preferred names and pronouns.

Please note that we will only contact your referees in the case of a successful application, so you do not need them to send recommendation letters at this stage of the application process.

We will review applications on a rolling basis, but **the final deadline for application submissions is the 31st of October 2024.**

If you have any questions about the application process, please contact uk-jobs@topos.institute (with davidjaz@topos.institute in cc) with your questions and we will endeavour to reply in a prompt manner.