# Call for Applications: Summer Research Associates

Spend the summer in Berkeley, California! Learn and apply powerful emerging mathematics for creating communications within and between complex systems under the mentorship of experts in the field.

We are a non-profit research institute dedicated to shaping technology for public benefit. We use cutting-edge mathematics, 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.

This year there are two tracks for Summer RAs: a **research track** and an **engineering track**, which have specific responsibilities and sought skills as described below. Full time, hourly, temporary positions are available for 8 – 10 weeks each, starting in June and ending in August. Each position will be mentored by Topos research staff or a select number of invited mentors. All positions are 40 hours/week, and are subject to all federal and state labor laws.

These positions require collaboration within a multi-disciplinary research environment consisting of mathematicians, computational and computer scientists, and domain scientists (both theoretical and experimental) conducting basic and applied research in support of Topos' mission. Each Summer RA will complete a specific Topos project, and will write a blog post by the last week of their employment. These projects may include an internal talk, software contribution, or paper. Please visit https://topos.site/summer to see the accomplishments of the previous cohorts.

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 organization that supports its team members.

## POSITION SUMMARY

- Research Associates will be responsible for supporting research project(s) in line with Topos Institute's research strategy and mission.
- Projects could be drawn from a wide range of areas, including applied mathematics and computer science, experimental computing systems, scalable algorithms and systems, artificial intelligence and machine learning, data management, workflow systems, analysis and visualization technologies, programming systems and environments, and system science and engineering.

### POSITION DETAILS

- Job Title: Research Associate or Research software engineering associate
- Job Location: Berkeley, CA (Required)
- Position Type: Temporary Full-Time
- Employment Type: Hourly
- Start Date: June 2026 onwards
- Salary: Starting at $30-$50/hour (commensurate with experience and depending on track)

### EDUCATION AND EXPERIENCE

- Bachelor's degree (and graduate degree, or currently pursuing graduate degree) in Mathematics, Computer Science, Computational Science, Engineering, Physics, Philosophy, Sociology, Public Policy or a field relevant to the job duties of this position
- Experience developing or understanding mathematical theories or tools for engineering or science applications, with specific knowledge base as relevant to the project
- Experience doing research or engineering within a team environment
- Experience writing academic publications and/or working with modern scientific software tools and frameworks

*Topos will accept applications until January 16, 2026. We aim to make offers by mid February.*

## Research track

Projects range fields including applied category theory; logic; programming languages; and science, technology, and society. Specific topics for 2025 include, but are not limited to:

- Computational category theory using CatColab (Rust/Typescript skills recommended)
- Double category theory
- Categorical statistics
- Polynomial functors
- Interacting dynamical systems
- Hybrid dynamical systems, attractor theory and fast-slow dynamics
- Proof assistants, formal verification, or structure editors
- Philosophical and ethical aspects of applied category theory

### POSITION RESPONSIBILITIES

The position requires collaboration within a multi-disciplinary research environment consisting of mathematicians, computational and computer scientists, and domain scientists (both theoretical and experimental) conducting basic and applied research in support of Topos' mission. Specific responsibilities may include:

- Participation in the development and analysis of new mathematical theories or new

computational methodologies for scientific problems, often customized to complex and large-scale scientific applications. Approaches may span all research fields from STEM to the humanities, depending on expertise of the research associate and mentor.
- Delivery and support of mathematical technologies for various scientific disciplines and applications, and/or analysis, documentation, or guidance on their uses.
- Dissemination of research through peer-reviewed papers, technical reports, and blog posts, as well as seminar and conference presentations.

### SKILLS & ABILITIES / WHAT WE SEEK FROM YOU

- Awareness of Topos' core scientific areas, including category theory, type theory, and programming languages
- Strong collaboration skills to work in teams and engage with Topos constituents
- Motivation and persistence in pursuing new research ideas
- Excellent written and oral communication skills to expert, broad scientific, and public audiences, including familiarity with LaTeX typesetting
- Ability to contextualize scientific work in wider cultural and social context, and consider possible positive and negative impacts of their work

## Engineering track

Now at an early alpha stage, CatColab is our first step at Topos toward building production-grade software intended for users without specialized mathematical training. CatColab is a web application with a novel category-theoretic core written in Rust, backed by a server also written in Rust. Its frontend, written in TypeScript/SolidJS, features real-time collaborative editing within a notebook-style interface. This is a unique opportunity to contribute to an open source software system that draws on cutting-edge research to support collective inquiry for the public benefit.

You do **not** need to know any category theory to be a good fit for this role (though an ideal candidate would have some familiarity with the subject). If you've worked on a technical, production-quality web app, ideally using Rust or TypeScript, and you're excited about CatColab, then we'd like to hear from you.

### POSITION RESPONSIBILITIES

Specific responsibilities may include:

- Delivery and support of mathematical technologies for various scientific disciplines and applications, and/or analysis, documentation, or guidance on their uses.
- Design, implement, test, and maintain software at the Topos Institute, in close collaboration with the research staff and in line with Topos Institute's scientific strategy and mission.
- Contribute to developing the CatColab platform, including frontend development in TypeScript and/or backend development in Rust. You might also contribute to the mathematical core, written in Rust, as your mathematical experience permits.

### SKILLS & ABILITIES / WHAT WE SEEK FROM YOU

- Strong collaboration skills to work in teams and engage with Topos constituents
- Experience in collaborative software development and version control
- Experience in Rust and/or TypeScript

# ABOUT TOPOS

Topos is an Equal Opportunity Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, or status as a protected veteran.

Studies have shown that women and people of color are less likely to apply for jobs unless they believe they meet every one of the qualifications as described in the job description. If this role speaks to you, we encourage you to apply, even if you don't believe you tick all the boxes.

If you have questions about this position, please contact our Office Manager, Molly White at molly@topos.institute. Applications will be reviewed on a rolling basis. All offers of employment are contingent upon completion of a background check.

Further information about Topos Institute can be found on our website: https://topos.institute. Check out our Blog, Youtube, and Research.

**To apply, please fill out our 2026 Summer RA Application Form by January 16, 2026.**