Department of Psychology
University of Toronto
JOB POSTING – POSTDOCTORAL FELLOW

Posting Date:
Monday July 14, 2025
Closing date:
Friday August 15, 2025
Supervisor:
Prof. William Cunningham, Department of Psychology, University of Toronto.
Expected start date:
September 1, 2025
Term:
12 months
Full Time Equivalent:
100% FTE expected.

Note that at the University of Toronto, the normal hours of work are 40 hours per week for a full- time postdoctoral fellow (pro-rated for those holding a partial appointment) recognizing that the needs of the employee's research and training and the needs of the supervisor's research program may require flexibility in the performance of the employee's duties and hours of work.

Area of Research:
Prof. Cunningham and colleagues, including Peter Tuchin (*Complexity Science Hub, Vienna*), have recently been awarded a *New Frontiers in Research Fund - Exploration* grant and are seeking a highly motivated, energetic, and collegial postdoctoral researcher to join the team. The project sits at the intersection of <u>social psychology</u>, <u>computer science and artificial intelligence</u>, <u>evolutionary theory</u>, and <u>historical dynamics</u>.

We are engaging in an ambitious project exploring the development and maintenance of inter-group cooperation over time, and the pitfalls and impediments that lead to group fracturing, partisan competition, and violent conflict across multiple levels and scales of interaction.

Our approach leverages cutting-edge **reinforcement learning models**, utilizes **social-psychological experimentation** techniques, and combines these with **models and theoretical insights** taken from fields as diverse as psychology, sociology, history, and evolutionary biology.

The successful candidate will demonstrate the ability to contribute to:

1. <u>Building computational models</u> of historical events to understand social cooperation and conflict

2. <u>Developing multi-agent reinforcement and generative AI models</u> to simulate social events and individual cognitive / behavioural responses

3. <u>Analyzing</u> experimental and modelling results and <u>writing</u> high-profile academic articles

4. <u>Collaborating</u> in a diverse, supportive, and inclusive team environment

Description of duties:
- Create computational simulation environments for multi-agent-based model experiments

- Develop agents using cutting-edge machine-learning techniques, track and assess their behaviour in model experiments

- Contribute to analysis of experiment results, produce visualizations and lead small-group discussions to assess results and aid in planning of additional / modified experiments

- Contribute to written material, including leading one or more academic articles

- Engage in regular reporting with supervisors and other project team, including (but not limited to) regular in-person / online meetings, written weekly reports, and impromptu meetings to discuss results and/or trouble-shoot challenges

- Perform collaboratively, collegially, and inclusively with fellow project members, other members of the Cunningham lab, and the University of Toronto community at large

Application review process:
Prof. Cunningham and project senior researcher Daniel Hoyer will review all applications on a rolling basis, scoring each based on a set rubric reviewed by non-project members of the University of Toronto with *E.D.I.* training. Up to 3 short-listed candidates will be interviewed (questions and scoring rubric to be circulated in advance). All candidates will be notified once an agreement has been reached with the successful candidate

Salary:
$55,000 CAD

Required Qualifications and Competencies:
- A PhD in Psychology, Cognitive Science, Computer Science, or related fields

- Demonstrated (i.e. through academic articles, formal training, referee affirmation) expertise in computational social science, computational modelling, and multi-agent systems

- Demonstrated (i.e. through academic articles, formal training, referee affirmation) proficiency with python, pytorch, and/or jax

- Ability to work independently and autonomously to meet project goals

- A high level of professionalism in communication and collaborative work practices. This includes the ability to work well in a team setting and displaying flexibility and responsiveness to feedback

- A willingness to contribute actively and energetically to the project and lab procedures, including voicing concerns and needs to project team and supervisors

Application instructions:
All individuals interested in this position must submit by <u>August 15, 2025</u>:
- **Cover Letter** which outlines the candidate's relevant experience, and skills, motivation for and interest in the project, and any other pertinent information the candidate wishes to disclose about their application (such as breaks in employment / educational timeline, etc)

- **Updated CV** including any relevant publications and other demonstrations of the required qualifications and competencies

- **Contact information for two referees** who can speak to qualifications and competencies relevant for the position

- **OPTIONAL: self-disclosure of personal identity information.** We are committed to fostering an inclusive and equitable research environment. We recognize that diverse experiences and perspectives enrich our work. Applicants are therefore welcome, **if they chose**, to voluntarily share any aspects of their identity (e.g., gender, sexuality, race) or lived experience that they feel are relevant to their application and demonstrate their unique contributions to a diverse and inclusive academic community. Note that this information will remain <u>strictly confidential, viewed only by the applicant review team and not retained after the final decision has been reached</u>. Any information shared by applicants will be taken into consideration to understand the breadth of experience within our applicant pool and will be considered as context alongside the rest of the application material. This is **NOT a requirement** of the application.

Further Information about the Position and University Policies
Employment as a Postdoctoral Fellow at the University of Toronto is covered by the terms of the CUPE 3902 Unit 5 Collective Agreement. This job is posted in accordance with the CUPE 3902 Unit 5 Collective Agreement.

The University of Toronto and the Social-AI and Social Cognitive Science Labs are <u>strongly</u> committed to diversity within its community and especially welcomes applications from racialized persons / persons of colour, women, Indigenous / Aboriginal People of North America, persons with disabilities, LGBTQ persons, and others who may contribute to the further diversification of ideas.

We believe that excellence flourishes in an environment that embraces the broadest range of people, that helps them to achieve their full potential, that facilitates the free expression of their diverse perspectives through respectful discourse, and in which high standards are maintained for students and staff alike. An equitable and inclusive working and learning environment creates the conditions for our diverse staff and student body to maximize their creativity and their contributions, thereby supporting excellence in all dimensions of the institution.

We want everyone applying to feel comfortable and think of our lab as a safe environment to freely express themselves. We hold equity, diversity and inclusivity as core values and are motivated to ensure they are practiced. For more information on the University's policies around Equity, Diversity, and Inclusivity, please see: https://people.utoronto.ca/