

GLOBALINK RESEARCH INTERNSHIP AWARD DISBURSEMENT INFORMATION AND PLACEMENT TERMS AND CONDITIONS

Dear Yuchen Ge,

Congratulations! You have been selected by Mitacs and Professor Janosch Ortmann from Université du Québec à Montréal – Montréal to receive a 2022 Globalink Research Internship award. You are therefore invited to participate in a research project at **Université du Québec à Montréal – Montréal**. Pursuant to an agreement with Université du Québec à Montréal – Montréal, Mitacs will administer your funding grant.

Mitacs Globalink Research Internship is a competitive program that pairs top-ranked international students with specific research expertise with faculty at Canadian academic institutions for a twelve (12) week research project of mutual interest between May and October 2022. You have been selected by your Canadian host faculty project leader due to your background and skills in the research area and the unique contribution you will be making to the research during your stay. **The skills required for your role (as described in the research description below) were found to clearly match your skills set, education, and research experience.**

Research internship details

University/Institution:	Université du Québec à Montréal – Montréal
Host professor:	Janosch Ortmann
Research project title:	Algebra for machine learning and stochastic programming
NOC code:	4012 Post-secondary teaching and research assistants
Research description:	This project concerns mathematical methods to underpin the application of unsupervised machine learning in stochastic optimisation.

The stochastic optimisation approach to maximising the expected value of a random quantity requires the discretisation of the underlying probability distribution. This is often done by sample a finite number of scenarios. In many applications, this requires a large number of scenarios, which is often computationally very expensive, sometimes prohibitively so.

In order to reduce the complexity of large-scale stochastic optimisation problems, we have developed an unsupervised machine learning approach that clusters these scenarios into similarity groups. In the present case, the similarity between the scenarios is measured on the basis of solutions characterizing them. Specifically, two scenarios are considered close to one another if the solution induced by one scenario is good with respect to the other scenario.

We are now looking to improve our methodology by means of algebraic methods. The research project consists of the application of the idea of Gröbner bases and similar algebraic objects to reduce the computational complexity of our machine learning approach.

During your internship, you will: The student will begin by surveying the existing literature on applications of algebra in optimisation. Under the co-supervision of the proposing professor and Professor Walter Rei (UQAM), the student will then select a suitable sub-problem and develop an approach that is tailored to it.

The internship will be completed with a report written by the student that presents the outcomes achieved. If the project progresses as planned, this report will contribute to a research paper to be co-authored by the student.

This internship will take place at UQAM, the Centre de recherche mathématiques (CRM) and the Interuniversity Research Center on Enterprise Networks, Logistics and Transport (CIRRELT). The student will benefit from interaction with several researchers from various disciplines and cultural backgrounds. She or he will also be invited to the academic and research activities organised by UQAM, CRM and CIRRELT.

Duration of research: 12 weeks — to begin between May 1 and July 31, 2022 (unless otherwise approved by Mitacs) and end no later than October 31, 2022 (unless otherwise approved by Mitacs). Shortened durations must be agreed upon with the host professor and Mitacs. Durations of more than twelve (12) weeks will not be permitted.

Hours of work: Minimum of forty (40) hours per week.

Your award covers the full twelve (12) week of your internship unless you fall short of the full twelve (12) weeks, in which case the award will be prorated according to time actually spent in Canada contributing to the internship project.

Due to COVID-19, you will need to follow all travel and public health requirements as mandated by the Public Health Agency of Canada, your host province, and your host institution in Canada. The following requirements are subject to change at any time; please ensure you keep yourself updated regularly: <https://travel.gc.ca/travel-covid/travel-restrictions/covid-vaccinated-travellers-entering-canada#entry-vaccinated>.

As an intern, pursuant to Canada's *Immigrant and Refugee Protection Regulations* s2, you are entering Canada to undertake activities classified as "work". As such, you might be exempt from a work permit under the [Global Skills Strategy](#). If you are required to obtain a work permit, due to COVID-19, immigration processing times might be longer than usual. You will be supported by Mitacs to plan accordingly.

By accepting this internship and agreeing to this Award Letter, you will follow all clauses as laid out in *Appendix A: Terms and Conditions — Obligations of the Globalink research intern*.

Upon arrival at the Port of Entry, you should have supporting documents, including (but not limited to):

- a copy of this Award Letter in its entirety
- your valid passport and any other document required to enter Canada (see <https://www.canada.ca/en/immigration-refugees-citizenship/services/visit-canada/entry-requirements-country.html>)
- proof that you meet requirements of the job, such as proof of work experience and education
- necessary immigration documentation (i.e. letter of introduction, biometrics, visa if applicable)
- documents as required by the Government of Canada to demonstrate you are adhering to public health protocol, e.g., pre-entry test results, ArriveCAN receipt, proof of vaccination, quarantine plan, etc. Please be sure to check the Government of Canada website regularly as requirements may change at any time: <https://travel.gc.ca/travel-covid/travel-restrictions/covid-vaccinated-travellers-entering-canada#entry-vaccinated>.

We look forward to welcoming you as a temporary member of the research team at Université du Québec à Montréal – Montréal.

Mitacs Globalink gratefully acknowledges the financial support of the Government of Québec through the Fonds de recherche du Québec - Nature et technologies (FRQNT), the Government of Canada as well as our partner in China, China Scholarship Council (CSC). Mitacs Globalink is offered jointly by Mitacs and FRQNT.

Mitacs Globalink is delivered by Mitacs on behalf of the following Academic partners:

Acadia University	Ontario Tech University	Université du Québec en Outaouais
Algoma University	Polytechnique Montréal	Université Laval
Athabasca University	Queen’s University	University of Alberta
Brandon University	Royal Military College of Canada	University of British Columbia
Brock University	Royal Roads University	University of Calgary
Cape Breton University	Ryerson University	University of Guelph
Carleton University	Saint Mary's University	University of Lethbridge
Concordia University	Saint Paul University	University of Manitoba
Concordia University of Edmonton	Simon Fraser University	University of New Brunswick
Dalhousie University	St. Francis Xavier University	University of Northern British Columbia
École de Technologie Supérieure	St. Thomas University	University of Ottawa
Emily Carr University of Art + Design	Trinity Western University	University of Prince Edward Island
HEC Montréal	Thompson Rivers University	University of Regina
INRS	Trent University	University of Saskatchewan
Lakehead University	Trinity Western University	University of the Fraser Valley
Laurentian University	Université Bishop	University of Toronto
MacEwan University	Université de Moncton	University of Victoria
McGill University	Université de Montréal	University of Waterloo
McMaster University	Université de Sherbrooke	University of Windsor
Memorial University of Newfoundland	Université du Québec à Chicoutimi	University of Winnipeg
Mount Allison University	Université du Québec à Montréal	Vancouver Island University
Mount Royal University	Université du Québec à Rimouski	Western University
Mount Saint Vincent University	Université du Québec à Trois-Rivières	Wilfrid Laurier University
OCAD University	Université du Québec en Abitibi-Témiscamingue	York University

Sincerely,



Petra Kukacka
Director, Program Operations

Enclosure:

- Appendix A: Terms and Conditions

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Please note that your funding is provided in accordance with China Scholarship Council (CSC).

Obligations of the China Scholarship Council (CSC)

The China Scholarship Council (CSC) will be responsible for providing:

1. Airfare from China to Canada and back by the most economical route
2. Reimbursement of immigration permit application fees (as required to participate in the research internship)
3. A stipend of Can\$1800 per month (2 months) that covers the costs of your living expenses, including accommodation cost of approximately Can\$700 per month.

Obligations of Mitacs

a) Financial arrangements

Mitacs will be responsible for providing the following:

1. A stipend of Can\$175 to contribute to the cost of transportation from the Canadian airport to accommodation, unless otherwise arranged by your host institution
2. Ensuring that you receive Canadian medical insurance
3. A stipend of Can\$1800 CA per month (1 month) that covers the costs of your living expenses, including accommodation cost of approximately Can\$700 per month
4. Provide a stipend of Can\$300 for any student fees charged to you by your Canadian host institution (the intern must pay the student fees to the university directly; student fees above Can\$300 are the responsibility of the intern)
5. A stipend of Can\$500 for any COVID-19 related expenses (e.g., COVID test, quarantine, expenses incurred during isolation, etc.)

Under Mitacs's funding policy, we are unable to provide you with any funds in advance of your internship start date and arrival in Canada. In order to receive funding, all interns must possess a valid immigration permit for the duration of their internship. Interns will be responsible for opening a Canadian bank account, following Mitacs's instructions, in order to receive funds once in Canada.

b) Local arrangements

You are responsible for finding and acquiring your accommodations for the duration of your stay, but Mitacs will provide support for your search should you require it.

Mitacs will assume responsibility for the following aspects of your local arrangements:

1. Provision of medical insurance to cover you for the duration of your research internship, either through participation in a mandatory healthcare insurance policy offered by your host institution, or an equivalent policy purchased by Mitacs on your behalf;
2. Professional skills workshops and/or industry and/or government meetings to enhance the experience of your research internship;
3. Provision of a Mitacs-approved Globalink Mentor for you to consult with about issues and questions that arise during your stay in Canada and act as your emergency contact. (Please note that the University of Alberta provides their own mentors.)
4. Other activities at the sole discretion of Mitacs.

Obligations of the Globalink research intern

1. As COVID-19 continues to impose public health concerns and travel restrictions, this award is contingent on the permission of Canadian governments, the host institution, as well as the government of your home country for free movement of interns across borders for research purposes. Should travel restrictions impede your ability to travel safely to Canada, Mitacs will seek to provide a comparable internship experience through distance research. However, award amounts would be adjusted to reflect limited travel. In circumstances where travel is not possible and where virtual/distance interactions cannot be arranged to support your project, this Award Letter will be terminated and you will be reimbursed any eligible costs provided you have followed Mitacs's instructions in preparation for your internship and that such costs have not been incurred against the advice of Mitacs.
2. Upon your arrival in Canada and throughout your stay, you are required to follow all public health protocols and guidelines of the federal government, the province in which you are hosted and the Canadian institution at which you are performing research. You must also comply with all instructions provided by Mitacs including, but not limited to, arrangement of flights and housing, arrangement of immigration documentation, dates of travel, etc. Mitacs will not cover any costs incurred where the intern has not complied with instructions delivered through Mitacs.
3. Please be advised that, for immigration purposes, Mitacs is not your representative and cannot provide advice on immigration matters. Mitacs will provide you with information as available on public government websites to potentially help navigate through the process on immigration, but Mitacs cannot guarantee nor make any representation regarding positive immigration outcomes.
4. Interns are required to participate in the program for 12 weeks, working a total of 40 hours per week for their host professor on their research project, unless otherwise arranged with the Canadian faculty member and approved by Mitacs. If your internship length needs to be shortened, contact Mitacs at helpdesk@mitacs.ca.
5. As a key component of the Globalink program, Mitacs may offer program participants opportunities to engage in professional skills courses, industry and government relations meetings, and other networking opportunities to supplement your research experience. Mitacs will, whenever possible, schedule meetings and courses in such a way as to minimize the impact on your primary focus, that of contributing to the research project. You are encouraged to participate in such Mitacs-arranged meetings and courses, and your host professor will be asked to support this component of the Globalink program. You are normally expected to dedicate 40 hours per week on your research project and will need to make arrangements with your host professor regarding time away from your research project.
6. Interns are expected to complete a final survey administered by Mitacs to rate their experience of the program.
7. Interns are required to check with their home institution regarding any conditions or actions involved with participating in the program.