

DSI Emergent Data Sciences Program

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Today's Infoessionion

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About the Data Sciences



What is the Data Sciences Institute (DSI)?

A multi-divisional, tri-campus, multidisciplinary hub for data science activity at the University of Toronto.

Goal: To accelerate the impact of data sciences across disciplines to address pressing societal questions and drive positive social change.



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Collaborative Research Teams & Supports

Catalyze new forms of collaboration by funding partnerships that bring methodologists and domain experts together at the inception of projects in collaborative research teams (CRTs).

Supports

- Catalyst Grant
- Critical Investigation of Data Science Grant
- Computational and Quantitative Social Sciences Grant
- Data Access Grant
- Research Software Development Support Program
- **Emergent Data Sciences Program**
- Doctoral Student Fellowships
- Postdoctoral Fellowships
- SUDS



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Data Science Pillars

Concentrations in data science at the University of Toronto where we can have significant impact and can be international leaders

Predictive
Analytics & AI



Heterogeneous Data:
Tools and Feature
Engineering



Translation:
Visualization, Data
Communication, & Policy



Causal Discovery &
Analysis



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EDSP Overview

Through the Emergent Data Sciences Program, the DSI funds leading researchers to galvanize, support, and advance data science work in key interdisciplinary areas where the University of Toronto excels or has the potential to excel. Primary funded activities should prioritize research concentration on leading topics with the objective of **building or strengthening communities and linkages within the University of Toronto**. Example activities that are eligible for funding include **workshops, seminars, conferences, distinguished lectures, and training sessions** that range in length and should involve long and short-term visitors, postdoctoral fellows, and students.

Value and Duration

Between CDN \$50,000 and CDN \$100,000 for 1 to 2 years



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Alignment with the Program

The DSI is strongly 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, LGBTQ2S+ persons, and others who may contribute to the further diversification of ideas.

The DSI encourages proposals for Emergent Data Science Programs that include a broad span of activity that may develop innovative data science methodologies, deep connections with computation and applied disciplines, new training programs, collaboration, knowledge mobilization, and impact beyond the academy. Ideal program proposals should advance the data sciences by pursuing the next big-yet-unknown data-driven field or computational or analytic breakthrough. Thoughtful blue-sky ideas are welcome.



Applicants should apply in teams of at least **2 PIs** who will act as program Co-Leads. Co-Leads should come from different disciplinary units within the University of Toronto or DSI partner institutions; proposals should explain how the disciplinary backgrounds of each Co-Lead will contribute to interdisciplinary excellence within the Emergent Data Science Program.



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Eligibility

- **Budgetary appointment** at U of T or at a DSI Funding Partner: For U of T, budgetary appointments are continuing, full-time academic appointments with salary commitments from a U of T academic unit.
- External funding partner PIs must be appointed as a Principal Investigator and be eligible to hold tri-council funding at their institution and be Members of the [School of Graduate Studies](#). Evidence that each PI has held or applied for tri-agency and external grants in the past 3 years is required.

Research Partner Institutes: Baycrest, The Centre for Addiction and Mental Health, Holland Bloorview Kids Rehabilitation Hospital, The Hospital for Sick Children, Lunenfeld-Tanenbaum Research Institute, Ontario Institute for Cancer Research, Unity Health Toronto, University Health Network, and Women's College Hospital.



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Application Sections

Stage 1: Letter of Intent

- Title
- Short Program Description
- Grants Information
- Team information
- Proposal and Objectives
- Impact and Alignment
- Roles, Expertise, and Collaboration
- Unit Head Signatures
- CVs
- Demographic survey

Stage 2: Full Proposal

- Revise LOI proposal with increased word count
- Program structure
- Description of Activities
- Schedule
- Training
- Potential Participants
- Metrics of Success and Impact
- Sustainability Plan
- Budget
- Suggested Reviewers



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Adjudication

- Applications will be processed by the competition team upon submission. Late proposals will not be accepted.
- Administrative review will ensure all application components are complete, PIs satisfy all eligibility criteria, and all CVs have been submitted.
- LOIs will be reviewed by DSI Executive Committee
- Applicants who pass the LOI stage will be invited to submit a full proposal.
- Full proposals will be reviewed by DSI Executive Committee



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Important Dates

- **May 28th**: LOI application portal closes at 11:59 PM ET
- **Mid-June**: Notifications to **LOI**-stage applicants
- **September 29th**: Full proposal application portal closes at 11:59 PM ET
- **Early October**: Notifications to applicants
- **January 2027**: Program start



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Current EDSP Projects

Advancing Aging and Neurodegeneration Research through Data Science

Focused on using AI to find creative solutions to address the challenges of caring for our growing aging population in diverse healthcare settings, including the need to predict disease development and treatment outcomes.

The program creates learning and collaborative opportunities that bring together data scientists, clinicians, and educators to discuss the development of new areas of research which can ultimately benefit the treatment, care, and healthcare service delivery for older adults.

Co-Leads

- **Rosanna Olsen**, Senior Scientist, Rotman Research Institute (RRI), Baycrest; Associate Professor, Status Only, University of Toronto
- **Malcolm Binns**, Statistician Scientist, Rotman Research Institute (RRI), Baycrest; Associate Professor, Department of Public Health Sciences, University of Toronto
- **Bradley Buchsbaum**, Senior Scientist, Rotman Research Institute (RRI), Baycrest; Associate Professor, Department of Psychology, University of Toronto
- **Jean Chen**, Senior Scientist, Associate Professor, Department of Medical Biophysics, Baycrest, University of Toronto
- **Kamil Uludag**, Senior Scientist, Krembil Brain Institute, University Health Network; Professor, Department of Medical Biophysics, Temerty Faculty of Medicine, University of Toronto



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Current EDSP Projects

Galvanizing Data Science Applications in Early Stage Drug Discovery

As the Structural Genomics Consortium launches a large-scale initiative to generate experimental screening data to train ML models, the Galvanizing Data Science Applications in Early Stage Drug Discovery will offer quarterly workshops on data science for hit-finding that include interactive sessions and lab visits where data scientists will learn about data generation and experimentalists will learn about data analysis.

Successful participants will be invited to prospectively predict novel molecules from commercial catalogs for disease-associated proteins that will be tested experimentally and published. The aim is for one or more start-up(s) to emerge from among the most successful and entrepreneurial participants.

Co-Leads

- **Matthieu Schapira**, Professor, Department of Pharmacology and Toxicology, Temerty Faculty of Medicine, University of Toronto PI, Structural Genomics Consortium
- **Rachel Harding**, Assistant Professor, Department of Pharmacology and Toxicology, Temerty Faculty of Medicine, University of Toronto PI, Structural Genomics Consortium
- **Mohamed Moosavi**, Assistant Professor, Department of Chemical Engineering & Applied Science, Faculty of Engineering, University of Toronto
- **Chris Maddison**, Assistant Professor, Department of Computer Science and Department of Statistical Sciences, Faculty of Arts & Science, University of Toronto Faculty Member, Vector Institute
- **Hui Peng**, Senior Scientist, Associate Professor, Department of Chemistry, Faculty of Arts & Science, University of Toronto



Current EDSP Projects

Bridging the Gap: From Computational Physics, to Physics-informed Machine Learning, to Data-driven Scientific Discovery

This program is dedicated to bringing together experts in numerical simulation and data science to explore the intersection and bridge the gap between physics-based models based on first principles in sciences/engineering and data-driven models based on machine learning techniques. The goal is to provide a collaborative platform that drives research towards truly predictive simulation capabilities that guide scientists and engineers making crucial decisions with high societal impact, ranging from sustainable design to medicine to astrophysics.

The program is structured around four themes: data-informed computational physics; physics-informed machine learning; data-driven discovery of physics; and their mathematical foundations.

Co-Leads

- Clinton P. T. Groth, Professor, Institute for Aerospace Studies, Faculty of Applied Science and Engineering, University of Toronto
- Aviad Levis, Assistant Professor, Department of Computer Science, Faculty of Arts and Science, University of Toronto
- Mary Pugh, Professor, Department of Mathematics, Faculty of Arts and Science, University of Toronto
- Masayuki Yano, Assistant Professor, Department of Computer Science and Department of Statistical Sciences, Faculty of Arts & Science, University of Toronto Faculty Member, Vector Institute



THANK YOU!

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awards.dsi@utoronto.ca

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