

# DATA SCIENCE FALL 2023 ORIENTATION



UNIVERSITY OF  
**WATERLOO**

FACULTY OF  
MATHEMATICS



# WELCOME ACTIVITY – LET'S GET TO KNOW ONE ANOTHER



Complete your Get to Know me card



Find a classmate



Share some information about you!



# DATA SCIENCE FALL 2023 ORIENTATION



UNIVERSITY OF  
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FACULTY OF  
MATHEMATICS



# Agenda

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Welcome & Introductions | Mu Zhu, Director – Graduate Data Science Program

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International Student Office | Cyntia Brătan, International Student Supports Specialist

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Administration & Program Overview | Marie Kahkejian, Graduate Program Administrator

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Ethics Workshop | Maura Grossman, Research Professor - Computer Science

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Co-op Introduction | Zachary Mercer, Faculty Relations Manager - Co-operative Education

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Computing & Software | Jim Johnston, Math Faculty Computing Facility (MFCF)

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Vector Institute | Susana Veliz, Program Officer, Vector Institute

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Data Science Graduate Program Ambassador | David Awosoga, Current Student

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Next Steps | Marie Kahkejian, Graduate Program Administrator



# WELCOME & INTRODUCTIONS

Mu Zhu,  
Director  
*Data Science Graduate Programs*



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MATHEMATICS

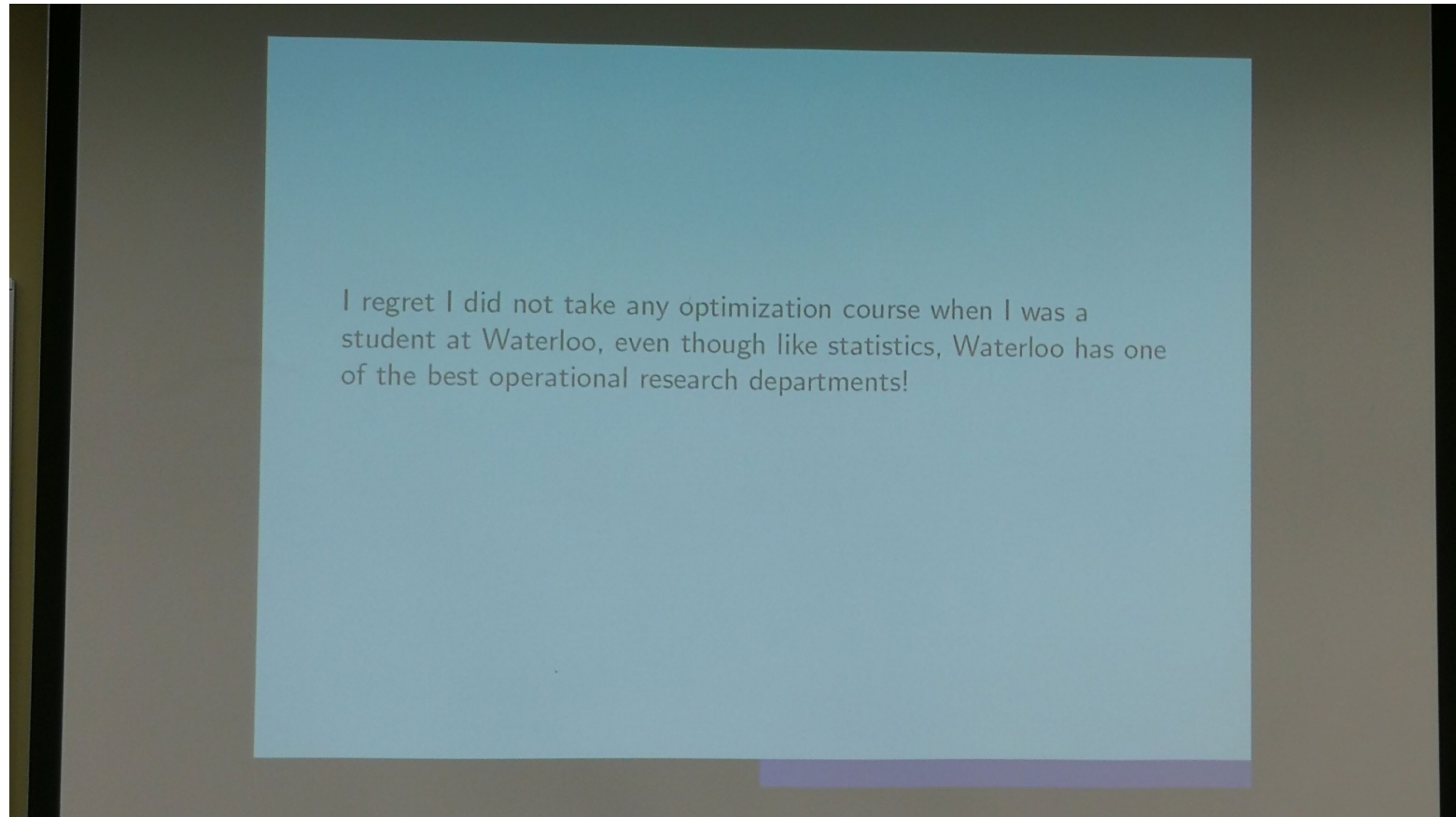


# MY PERSONAL ADVICE TO STUDENTS



- mathematics/theory **vs** software/practice
  - ability to **create** new software, not just **use** existing software
- skill/vision/perspective **vs** specific knowledge
  - focus on broadening your **experiences** and tasting different **ways of thinking**
  - not a checklist of **specific know-hows**—many become outdated fast anyway
  - not “end of the world” if a specific course is not available; take another one
- faculty freedom in teaching **vs** a fixed, rigid, standardized syllabus
  - if the latter, there’d be no value in going to “top schools”

# Picture taken at a recent seminar given by a UW grad ...

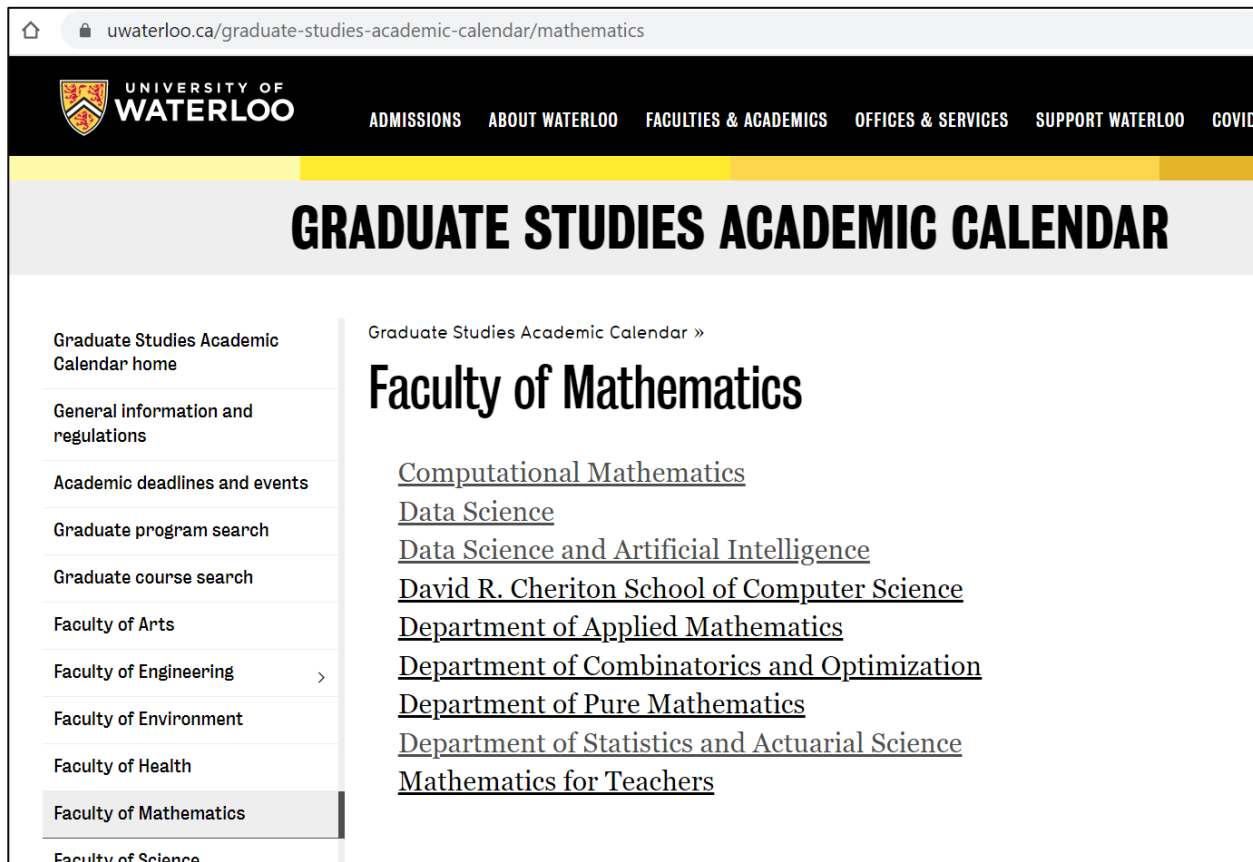


"I regret I did not take any **optimization** course when I was a student ..." (Aug 2023)



# THE “GRADUATE CALENDAR” IS OUR “CONSTITUTION”!

- <https://uwaterloo.ca/graduate-studies-academic-calendar/mathematics>



Data Science

Data Science and Artificial Intelligence

(Ref: [Course Selection Guide, Aug 1,](#)

# EXAMPLES:

- Core courses
  - “At the discretion of the **Data Science Committee**, substitutions may be allowed.”
- Elective courses
  - “Courses not on this list are subject to the approval of the Graduate **Director**.” (also next slide)
- “In order to remain in good academic standing, students must maintain an average of **75%** and a minimum grade of **70%** in all their courses. ... Students whose average falls below the program’s minimum requirements may be required to withdraw from the program.”

# LIST OF ADDITIONAL PRE-APPROVED ELECTIVES

- Coming soon ... (**Watch Out for Announcement!**)
  - to simplify protocol and reduce bureaucracy
- Some examples (i.e., a "sneak preview"):
  - AMATH 840 (Advanced Numerical Methods for Computational and Data Sciences)
  - CO 666 (Continuous Optimization)
  - CS 679 (Neural Networks)
  - STAT 940 (Deep Learning)





# WHOM TO APPROACH?

- specific >>>>>>>>> program **administrator** (i.e., Marie)
  - e.g., forms, rules/procedures (co-op, graduation, ...), ...
  - Office hours (Fall 2023):
    - T (M3 2118 office), 2:00– 3:00PM
    - Th (M3 2118 office), 10 – 11:30AM
  - **email:** [ds.grad.admin@uwaterloo.ca](mailto:ds.grad.admin@uwaterloo.ca)
- “philosophical” >>>>>>>>> program **director** (i.e., Mu)
  - e.g., advice (academic, career, ...), concerns, complaints, ...
  - office hours (**Fall** 2023): M 12:00–13:00 & W 15:15–16:30, M3 2103B
  - **email:** [ds-director@uwaterloo.ca](mailto:ds-director@uwaterloo.ca)

# STUDENT SUCCESS OFFICE

Cyntia Brătan, MEd (she/her)  
International Student Supports Specialist

# NAVIGATING SUCCESS: YOUR JOURNEY WITH THE STUDENT SUCCESS OFFICE

Cyntia Brătan, MEd (she/her)  
International Student Supports Specialist



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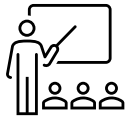
Student  
Success Office





# STUDENT SUCCESS OFFICE

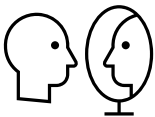
## REASON 1: STUDENT LEADERSHIP PROGRAM



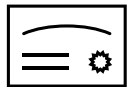
SIX WORKSHOPS



ON CAMPUS EXPERIENCE



REFLECTION



CERTIFICATE OF COMPLETION

## REASON 2: FOUNDATIONAL TRAINING PROGRAM



PEER TO PEER



MODULE ON UW'S LEARN PLATFORM



TWO-HOUR SYNCHRONOUS WORKSHOP

## REASON 3: THE CONNECTION COLLECTIVE



RECEIVE MENTORSHIP:  
BLACK, INDIGENOUS, RACIALIZED,  
2SLGBTQIAA+, INTERNATIONAL, AND OTHER  
HISTORICALLY UNDERREPRESENTED GROUPS



# STUDENT SUCCESS OFFICE

## REASON 4: IMMIGRATION CONSULTING



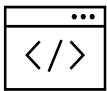
IMMIGRATION REQUIREMENTS



INFORMATIVE WEBPAGE



IMMIGRATION INFORMATION SESSIONS



WEB FORM

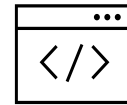


ONE-ON-ONE SUPPORT



PORTAL IMMIGRATION DOCUMENT REMINDER

## REASON 5: INTERNATIONAL STUDENT RESOURCES



INTERNATIONAL STUDENT GUIDE



INTERNATIONAL PEER COMMUNITY



INTERNATIONAL STUDENT CONNECTION NEWSLETTER



HOLIDAY DINNER & UWINTERLOO



ONE-ON-ONE SUPPORT



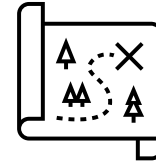
# STUDENT SUCCESS OFFICE



Leadership  
skills



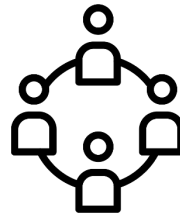
Mentor



Be mentored



Immigration  
consulting



International student  
experience



Paid opportunities



# STUDENT SUCCESS OFFICE (SSO) RESOURCES



## STUDENT LEADERSHIP PROGRAM

6 WORKSHOPS  
ON CAMPUS EXPERIENCE

REFLECTION  
CERTIFICATE OF COMPLETION



## FOUNDATIONAL TRAINING PROGRAM

LEARN MODULE

SYNCHRONOUS WORKSHOP



## THE CONNECTION COLLECTIVE

RESOURCE SHARING  
UPPER PEER SUPPORT  
DISCUSSIONS  
ACTIVITIES

BLACK, INDIGENOUS, RACIALIZED,  
2SLGBTQIAA+, INTERNATIONAL,  
AND OTHER HISTORICALLY  
UNDERREPRESENTED GROUPS



## IMMIGRATION CONSULTING

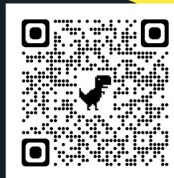
STUDY PERMIT QUESTIONS  
POLICIES FOR WORKING  
PGWP

IMMIGRATION INFO SESSIONS  
SAME-DAY APPOINTMENTS  
WEB FORM INQUIRY

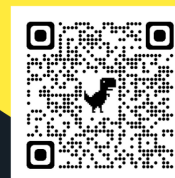
## INTERNATIONAL STUDENT RESOURCES

INT'L STUDENT GUIDE  
INTERNATIONAL PEER COMMUNITY  
INT'L STUDENT NEWSLETTER

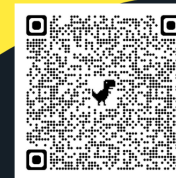
UWINTERLOO  
INT'L STUDENT HOLIDAY DINNER  
ONE-ON-ONE SUPPORT



Visit the Student Success  
Office website  
(ALL STUDENTS)



Attend IPC's  
Meet and Greet  
(ALL STUDENTS)



Experiencing extenuating  
circumstances? Book a 1:1  
(INTERNATIONAL STUDENTS)



# UNIVERSITY OF WATERLOO



## Student Success Office



[uwaterloo.ca/sso](http://uwaterloo.ca/sso)



[success@uwaterloo.ca](mailto:success@uwaterloo.ca)

# ADMINISTRATION & PROGRAM OVERVIEW

Marie Kahkejian

Graduate Program Administrators  
*Data Science Graduate Program*



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FACULTY OF  
MATHEMATICS



# ADMINISTRATIVE TOPICS

1. Your **EMAIL** account (ending in @uwaterloo.ca) is set up automatically at the time of enrollment but you may need to register. Check your **UW email** regularly.
  1. All communications are sent to your uwaterloo email address
2. Update your **MAILING ADDRESS** on QUEST as soon as possible. As the university will use this as your primary mailing address.
3. For MMath in DS students, funding is handled by your home unit (your supervisor's department/school). Please connect with them if you haven't already and copy ds.grad.admin@uwaterloo.ca.





# TYPE ALL FORMS!

Remember, UWaterloo **DOES NOT** accept handwritten forms. All forms will be electronically fillable using [Adobe Reader](#) or MS Word.



# SPACES

The Data Science program has designated student spaces in the M3 building!

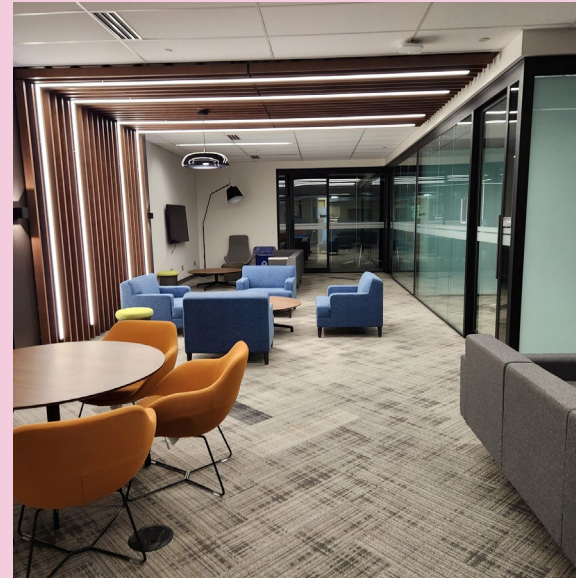
## Data Science Lab (M3 2102)

- Quiet study space with many terminals
- Lockers
- Printer



## Data Science Lounge (M3 2103)

- For study groups, hanging out
- Note: program has right of first use (e.g., director's office hours, meetings of the steering committee, etc)



# MANDATORY GRADUATE STUDENT TRAINING

Grad students must complete the following training modules in the first 8 weeks.

| Delivery                      | Course ID  | Duration   |
|-------------------------------|--|------------|
| Online – Safety Office        | <a href="#"><u>Employee Safety Orientation (SO1001)</u></a>  | ~60 min    |
| Online – Safety Office        | <a href="#"><u>WHMIS 2015 (SO2017)</u></a>                   | ~45-60 min |
| Online – Safety Office        | <a href="#"><u>Workplace Violence Awareness (SO1081)</u></a> | ~60 min    |
| Online – LEARN (for TAs only) | <a href="#"><u>Accessibility Training module</u></a>         | ~30 min    |
| Online – LEARN                | <a href="#"><u>Graduate Academic Integrity Module</u></a>    | ~1-2 hours |

# DATA SCIENCE GRAD STUDENT SUPPORT AND RESOURCES

| Support Area  | What They Do   | Location/Contact  |
|---|--|---|
| Graduate Studies and Postdoctoral Affairs (GSPA)        | Provides support to students, postdocs, staff and faculty who are engaged in graduate work and research at the University of Waterloo.   | <a href="#">The Centre, Needles Hall, 2<sup>nd</sup> floor, room 2201</a><br><a href="mailto:askthecentre@uwaterloo.ca">askthecentre@uwaterloo.ca</a><br>519-888-4567 ext.42268 |
| The Centre  | General UWaterloo questions, official documents  | <a href="#">The Centre, Needles Hall, 2<sup>nd</sup> floor, room 2201</a><br><a href="mailto:askthecentre@uwaterloo.ca">askthecentre@uwaterloo.ca</a><br>519-888-4567 ext.42268 |
| Counselling Services                                    | Professional counselling services are provided, at no charge, in a private and confidential setting to UWaterloo students. Get self-help, mental health, urgent care contact information and more.                   | <a href="#">Needles Hall, 2<sup>nd</sup> floor</a><br>519-888-4567 ext. 32655   |
| Health Services   | Provides convenient, confidential and comprehensive medical care to registered students at Waterloo. They work in coordination with other health-related services on campus and in the Kitchener-Waterloo community. | <a href="#">Health Services Building</a><br>519-888-4096  |
| Student Success Office (SSO)                            | Provides and facilitates strategic student support for academic and personal success.<br><br>*Support for international students include immigration consulting, SIN, application help, etc.                         | <a href="#">South Campus Hall, second floor</a><br>519-888-4567 ext. 84410  |
| Co-operative Education & Centre for Career Action (CCA) | General co-op questions, interview and career services available to students   | <a href="#">William M. Tatham Centre (TC)</a><br><a href="mailto:ceca@uwaterloo.ca">ceca@uwaterloo.ca</a><br>519-888-4026   |



# MASTER OF DATA SCIENCE AND ARTIFICIAL INTELLIGENCE (MDSAII)

## Full-time program structure

- 12 to 16-month professional coursework-based program
- Degree requirements: 9 courses and 1 co-op term\*

*\*students may extend their work term for up to 8 months with the same employer*

## Part-time program structure

- 36-month duration with 1 course per term



# MDSAI CO-OP

This cohort's co-op term is **Spring 2024 (May – August 2024)**.

**\*Mandatory preparatory workshops** for co-op Masters students will be held on the following dates: You must attend **ALL 3 dates** to complete these workshops before your co-op term. These will be virtual and the links below will take you to the appropriate Zoom meeting.

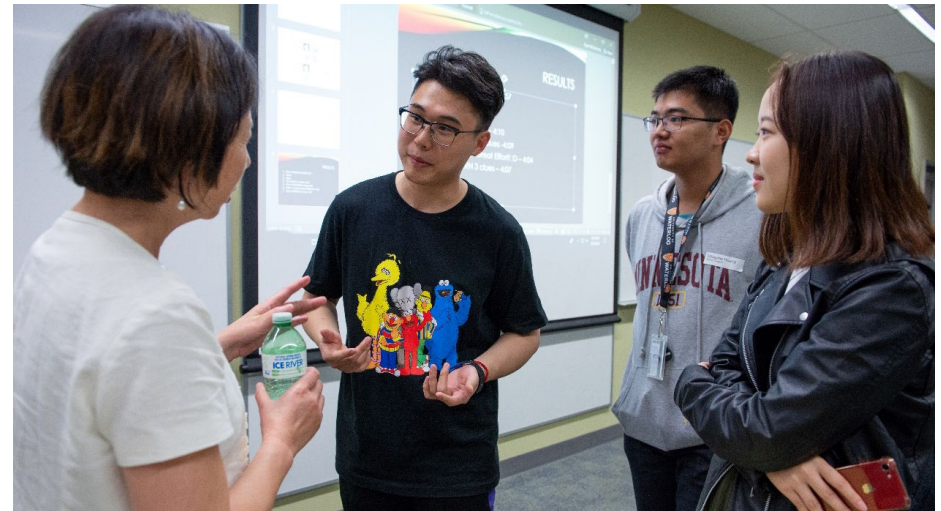
| Workshop   | Date                   | Time         |
|--|------------------------|--------------|
| <a href="#"><u>Co-op Documents (Résumés, cover letters) workshop</u></a> | Wednesday September 27 | 1:30-3:00 PM |
| <a href="#"><u>Interviews workshop</u></a>                               | Wednesday October 4    | 1:30-3:00 PM |
| <a href="#"><u>Co-op Education process &amp; strategy workshop</u></a>   | Wednesday October 18   | 1:30-3:00 PM |

\*International students will require a **co-op work permit**. Zachary Mercer from Co-operative Education will go into more detail later.

# MASTER OF MATHEMATICS IN DATA SCIENCE (MMATH IN DS)

## Program Structure

- 16 to 24-month research-based program with guidance from a faculty member in the field of Data Science
- Degree Requirements:
  - 4 courses
  - Master's Thesis
- Progress Reports
  - Completed bi-annually (July & January)
  - Tool to ensure you are progressing effectively in the program.
  - Encourages continual, constructive interaction between you and your supervisor



# **COURSE ENROLLMENT REMINDERS**

# COURSE ENROLMENT



Classes have already started but you may use the QUEST system on-line until **Sep 26th** to add classes to your schedule. Please make sure to check [GSPA's Important Dates](#) for deadlines.

**Sep 26:** 100% tuition and fee refund deadline

**Sep 27-Nov 21:** Dropping a course adds a WD (withdrew) on transcript

**Oct 20:** 50% tuition and fee refund deadline



MDSAIC students are normally expected to take 3 courses each study term, for a total of 9 courses. Please consult with the Director for any exceptions to this. We strongly recommend taking a maximum of 3 courses at least in the first term.



MDSAIC sequence:

Fall 2023 – 3 courses

Winter 2024 – 3 courses

Spring 2024 – Coop Term (no courses)

Fall 2024 – 3 courses





# COURSE ENROLMENT



MMath in DS students must complete 4 courses total.



Students lacking adequate background in computer science or statistics may be required to complete a foundation course (CS 600 or STAT 845) which you would have been instructed to enroll in already.



EMLS (remedial language courses) do NOT count towards a student's grad course count for a term and EMLS 601R (speaking) & 602R (writing) can be taken in the same term.

# CORE COURSE SUBSTITUTION



Request to waive a core course requirement can be made by submitting [a form](#) (completed electronically)  
[ds.grad.admin@uwaterloo.ca](mailto:ds.grad.admin@uwaterloo.ca)



Needs evidence (course outline, topics, textbook) indicating a previous course taken is sufficiently close to one of the core courses



The request needs the approval of program Director,  
Mu Zhu  
[ds-director@uwaterloo.ca](mailto:ds-director@uwaterloo.ca)

# ACADEMIC INTEGRITY

- Academic integrity is a principle highly valued at UW
- [Policy 71](#) prescribes UW disciplinary process
- **Rules on collaboration differ from course to course**
  - a. Prof A: “No collaboration”
  - b. Prof B: “Students can discuss but the final submission should be their own work”
- If the rules for a course are not clear, ask the instructor
- <https://uwaterloo.ca/academic-integrity/integrity-matters-mobile-application>



# QUESTIONS?

## Prof. Mu Zhu

- Professor & Program Director
- [ds-director@uwaterloo.ca](mailto:ds-director@uwaterloo.ca)

### Meetings available:

- By appointment
- Drop-in hours (Sept 6–Dec 5):
  - M (M3 2103B): 12:00–13:00
  - W (M3 2103B): 15:15–16:30

## Marie Kahkejian

- Graduate Program Admin
- [ds.grad.admin@uwaterloo.ca](mailto:ds.grad.admin@uwaterloo.ca)

### Meetings available:

- By appointment
- Drop-in hours (starting Sept 11):
  - Tues (M3 2118): 2:00– 3:00PM
  - Thurs (M3 2118): 10:00– 11:30AM

# ETHICS WORKSHOP

Maura Grossman

Research Professor | Cheriton School of Computer Science



# ETHICS WORKSHOPS

3 live virtual workshops instructed by Professor Maura Grossman (offered at two different times each) will be offered this Fall term to complete your required Ethics milestone.

It is strongly recommended that you complete these workshops this Fall 2023 term. More information, including syllabus and links will be provided by email in the next few weeks.

| Workshop          | Date Options<br>(attend one or the other each week)          | Time                                      |
|-------------------|--|---|
| Ethics Workshop 1 | Monday, Sep 25 <sup>th</sup><br>Friday, Sep 29 <sup>th</sup> | 1:30pm – 4:30pm ET<br>9:00am – 12:00pm ET |
| Ethics Workshop 2 | Monday, Oct 2 <sup>nd</sup><br>Friday, Oct 6 <sup>th</sup>   | 1:30pm – 4:30pm ET<br>9:00am – 12:00pm ET |
| Ethics Workshop 3 | Monday, Oct 16 <sup>th</sup><br>Friday, Oct 20 <sup>th</sup> | 1:30pm – 4:30pm ET<br>9:00am – 12:00pm ET |



# CO-OP INTRODUCTION

Zachary Mercer

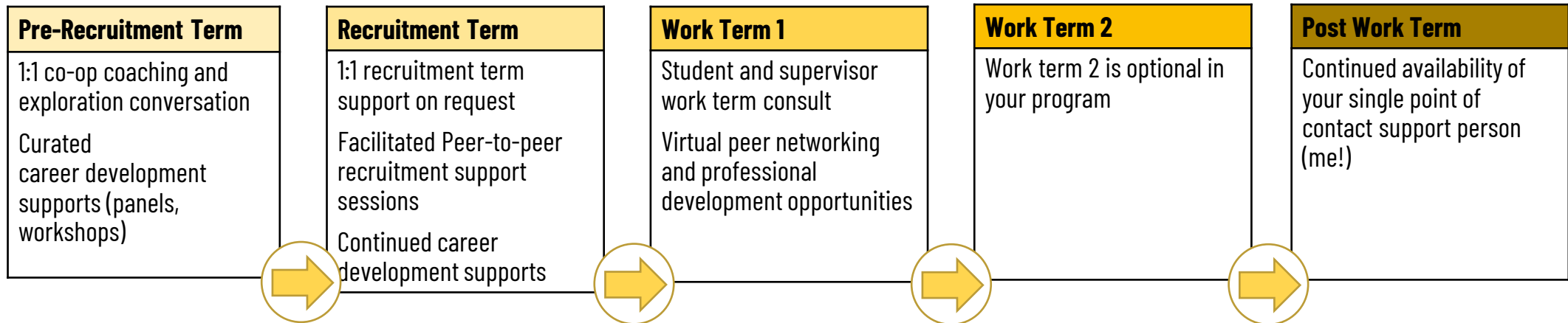
Faculty Relations Manager

*Co-operative Education – Faculty of Mathematics*

# What is co-op?

- Co-op alternating consists of alternating academic terms and paid work terms. Co-op internship consists of several co-op work terms back-to-back. In both models, work terms provide experience in a workplace setting related to the student's field of study.
- We take academic learning into the workplace, and professional experiences into the academic world.

# A look ahead



# How can we help?

- Get in touch, I am here to help
- <https://uwaterloo.ca/career-action/>
- <https://careerhub.uwaterloo.ca/>
- <https://uwaterloo.ca/campus-wellness/>
- <https://uwaterloo.ca/student-success/>
- <https://uwaterloo.ca/co-operative-education/important-dates>
- <https://uwaterloo.ca/co-operative-education/supports-and-resources/co-op-rights-and-responsibilities>

# COMPUTING AND SOFTWARE AT WATERLOO

Jim Johnston | *Math Faculty Computing Facility (MFCF)*





# Math Faculty Computing Facility

## OVERVIEW

MFCF provides services and resources for Faculty of Math students (e.g. MDS), faculty, staff and courses.

🕒 [uwaterloo.ca/mfcf](http://uwaterloo.ca/mfcf) main site; [rt.uwaterloo.ca/SelfService/Forms/MFCFhelp](http://rt.uwaterloo.ca/SelfService/Forms/MFCFhelp) request form

🕒 MFCF Help Center in MC 3017 (M-F 09:00-16:30), [mfcfhelp@uwaterloo.ca](mailto:mfcfhelp@uwaterloo.ca)

🕒 Linux Servers (including GPU and Parallel clusters)

🕒 SSH to one of: [linux.math](http://linux.math), [biglinux.math](http://biglinux.math), [fastlinux.math](http://fastlinux.math), and [linux.student.math](http://linux.student.math) (course work only)

🕒 RDP to [fe.math.uwaterloo.ca](http://fe.math.uwaterloo.ca) (used by thin clients)

🕒 Windows Servers (including GPU server)

🕒 RDP to [windows.math.uwaterloo.ca](http://windows.math.uwaterloo.ca) (used by thin clients)

🕒 Mathematical software available in both environments include MATLAB, Maple, R, SPlus, Julia, Python, NumPy, SciPy, etc. CUDA libs installed for several apps on GPU servers. Instructional material is available on MFCF website.

🕒 Faculty of Math on-site file server (`smb:\\files.math.uwaterloo.ca\<<userid>`)

🕒 Linux home directories (`/u/<userid>` or `/home/<userid>`)

🕒 Windows home drive (`N:\`) and Documents folder. **Important:** When you login you will be using a local profile stored on C: drive that is unique to each computer in the cluster, and it can be erased at any time. Only store files on N: drive or Documents folder (Desktop and Downloads may be deleted when you logout).

Computer Science Computing Facility ([uwaterloo.ca/cscf](http://uwaterloo.ca/cscf)) provides additional resources for CS (e.g. MDS/AI).

Information Systems & Technology ([uwaterloo.ca/ist](http://uwaterloo.ca/ist)) provides site licensed resources such as 2FA/Duo, VPN, Nexus and Azure domains, M365 (MS Office, Teams, Skype, etc).

If you have problem, start with MFCF and we'll redirect you if necessary.

\*\* These slides and the much more detailed MFCF presentation for Grads will be made available

# Math Faculty Computing Facility

## MDS & MDS/AI LAB (M3 2102/2119)

- ⌚ 37 HP thin clients which use RDP to connect to
  - ⌚ [windows.math.uwaterloo.ca](http://windows.math.uwaterloo.ca) (Windows Server 2022)
    - ⌚ Thin client USB port forwarding is enabled
  - ⌚ [fe.math.uwaterloo.ca](http://fe.math.uwaterloo.ca) (Linux)
    - ⌚ This is a "front-end" server with no apps installed. From here, you ssh to other Linux hosts.
  - ⌚ VPN is required to access these systems from off-campus
  - ⌚ These systems can be accessed via on-campus wireless (Eduroam)
  - ⌚ Always logout or disconnect when you leave your thin client. These are shared resources and not to be monopolized. Disconnected Windows sessions will be reconnected the next time that you login.
- ⌚ 1 Xerox printer in MC 2119
  - ⌚ `\\maprint01.math.private.uwaterloo.ca\lx1_md sai`
  - ⌚ Contact Marie Kahkejian if there are problems with the printer
- ⌚ Using your own equipment
  - ⌚ Standard HDMI cable installed on each monitor; adaptors not provided
  - ⌚ Instructions provided on background of each thin client
  - ⌚ Only the first 2 (black) AC power receptacles work
    - ⌚ A work request has been submitted to have the orange receptacles enabled
  - ⌚ Unplugging the USB keyboard and mouse should not harm the thin client
  - ⌚ If you unplug something, plug it in again when you are done

Connections

- linux
- windows

Start a session on a Linux login host, then open Terminal windows to log in to Linux CPU and GPU Servers

Start a session on a Windows CPU server.

**How to connect monitor to your own laptop**

- do not power off the thin client.
- connect the provided HDMI cable to your laptop.
- press second button from left on monitor front panel to bring up Input selection options, using up down buttons, select HDMI, then press third button from left to confirm your selection.
- switch the display back to the thin client when you are done.

**Sign Out before you leave the desk**

- to sign out from Linux: click on Applications on the top left corner, then click on Log Out.
- to sign out from Windows: select **Start**, then on the left side of the Start menu, choose the **Accounts** icon (or picture), and then select **Sign out**.

**Printing from Windows**

- click search, type in \\maprint01 and hit enter
- a list of printers will come up
- double click on lx1\_mdsai
- the printer is in the back room

**If you remove keyboard and/or mouse from thin client to use with your laptop then please connect them back to it when you are done.**



# MFCF Data science Grad Session

UNIVERSITY OF  
WATERLOO  
FALL 2023

# VECTOR INSTITUTE + WATERLOO MMATH IN DATA SCIENCE & MDSAI

Susana Veliz

Programs Officer | Vector Institute

# Waterloo M.Math in Data Science and MDSAI Orientation

Susana Veliz

Programs Officer

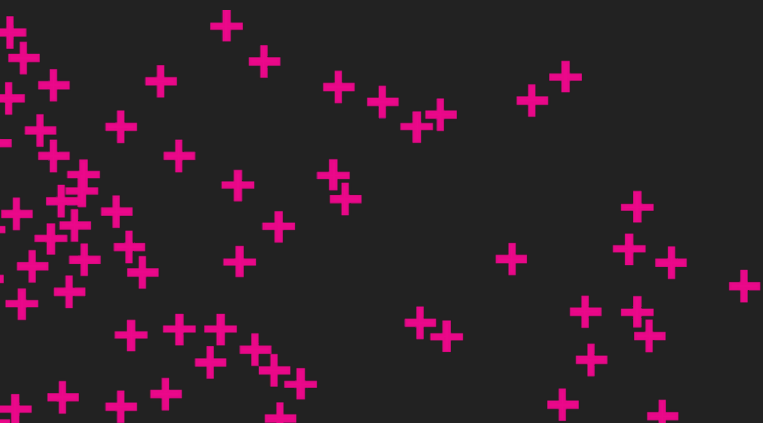
[aimasters@vectorinstitute.ai](mailto:aimasters@vectorinstitute.ai)



# What does the Vector Institute do?

The Vector Institute is a leader in the transformative field of artificial intelligence, excelling in machine and deep learning — an area of scientific, academic, and commercial endeavour that will shape our world over the next generation.

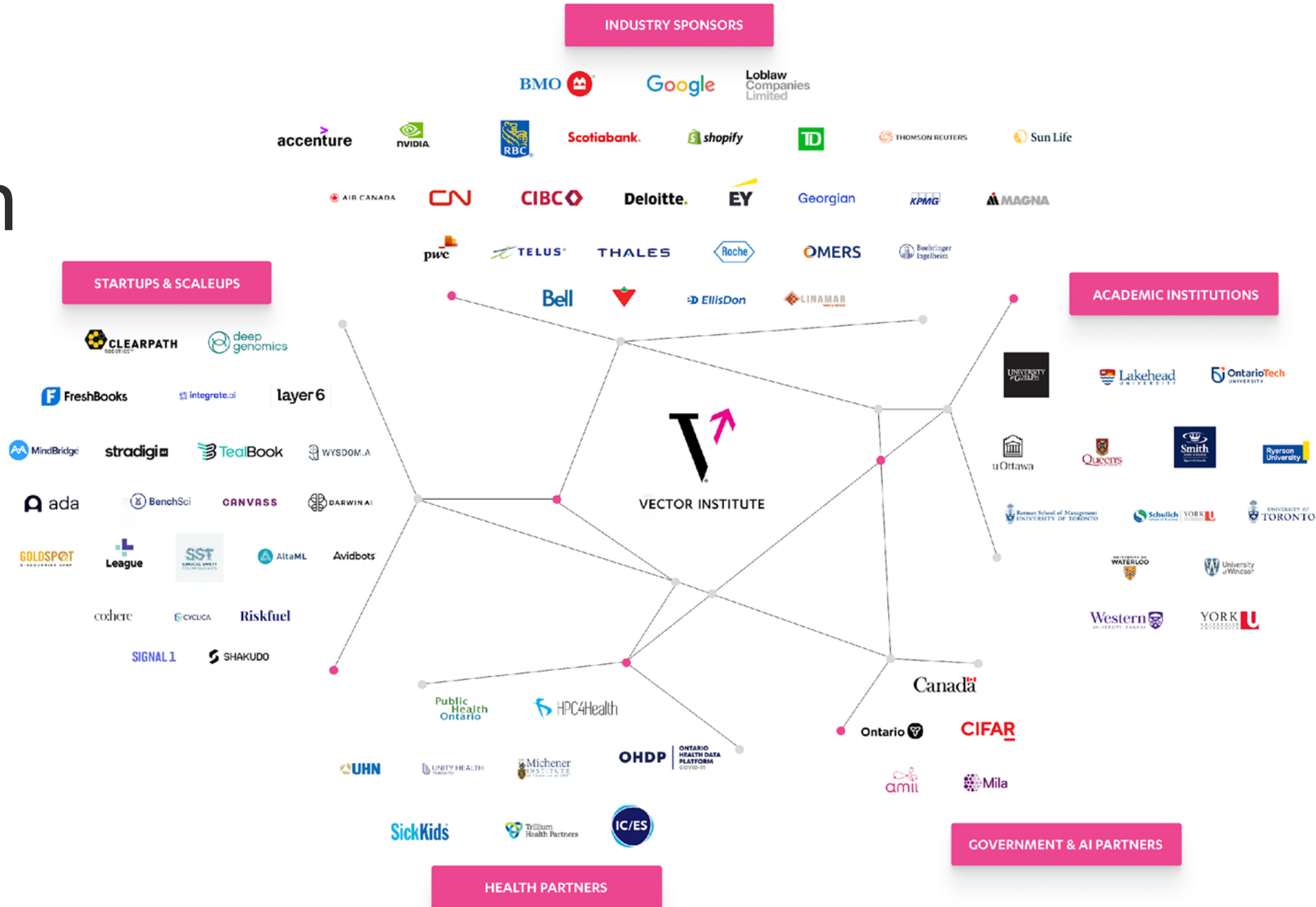
Vector has created a community of premier AI talent by attracting and retaining top machine learning and deep learning researchers.



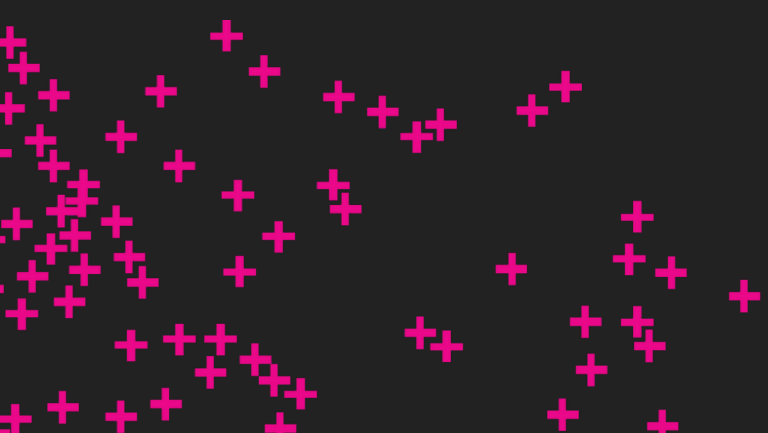


# Who we work with

Vector helps you connect with the broader AI ecosystem in a variety of ways.




# Building the next generation of AI Talent



Vector's goal is to build the next generation of top AI talent in Ontario by working with universities through program recognition and connecting you to opportunities that will accelerate your career in AI.

By joining the M.Math in DS and MDSAI programs at the University of Waterloo, you've automatically become a part of the Vector community. Your programs are recognized by the Vector Institute as they were reviewed by a committee of Vector faculty and industry representatives working in AI.

Learn more about Vector-recognized AI Master's programs [here](#) .



# How you can benefit from Vector?



# Accelerate your career in AI

Attend career exploration and recruitment-focused events,  
such as:

- Annual AI Summit & Career Fair on September 15th
- Recruitment Information Sessions

Learn about career pathways and projects in AI by exploring  
specific industries and topics, such as:

- Research & Careers in AI series



*Connect with 140+  
organizations*

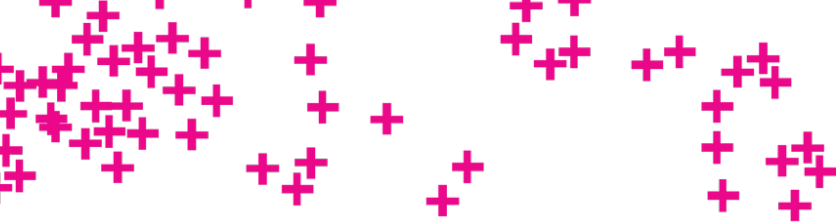
*Be one of the 400+  
Vector-affiliated students  
hired by Vector sponsors*

# Find your next career opportunity in AI

- Connect with over 100 organizations, including Vector industry sponsors, health partners, universities and start ups on the [Digital Talent Hub](#), a curated job board for AI roles
- The platform features internships, part-time and full-time job opportunities
- Let employers find you through our candidate database



*Since 2017, 3,700+  
postings for AI-focused  
jobs and internships were  
offered on Vector's Digital  
Talent Hub*



# Gain exposure to the latest AI research

**Learn about the latest AI research from around the globe through events such as:**

The Fields Institute Machine Learning Advances and Applications Seminar series



*Connect with 700+ researchers in the Vector Community*



# Acquire real-world AI experience

- Work at Vector on real-world data and AI-related projects across workstreams on Applied Internships including Health, Engineering, and Industry Innovation.
- Get paid while you work full or part-time through the internship program
- Internships may be remote or in-person
  - Research Internships
    - Work with Vector Faculty on research projects
    - Recruitment for summer 2024 will begin late October until January.
  - Applied Internships
    - Work with Vector staff in a professional capacity.
    - Recruitment will begin in early October.

[Sign up](#) to know when applications open!



*43+ Applied interns were hired through Vector's expanded internship program. You could be one of them!*

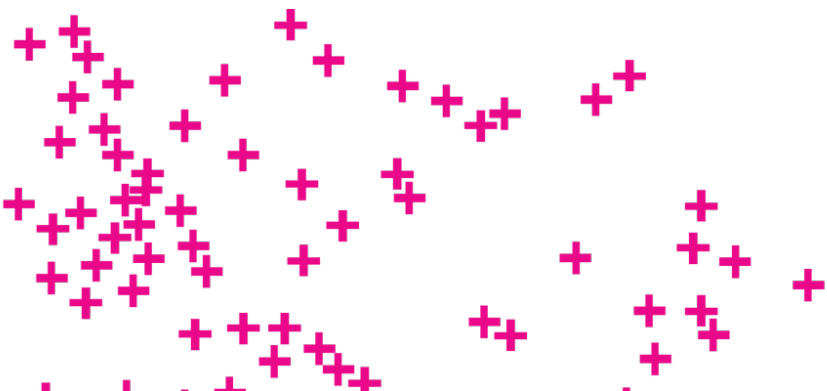
# Be job ready!

- Leverage Vector for career support activities to aid you in preparing for your internship/job search or career transition
- Visit our [YouTube channel](#) to watch past webinars



*85+ one-on-one career support sessions and two webinars within the past year*

*1,740+ Students participated in career development programming*



# Sara El-Shawa

MASc in Engineering (Collaborative Specialization  
in AI), University of Guelph '22  
Vector Scholarship in AI Recipient 2020-21

*“I’ve been able to collaborate and work with Vector researchers and industry sponsors on several AI projects. I’ve also had the opportunity to explore subjects I was unfamiliar with before joining Vector.”*

**Tips for Students:** Make good use of Vector’s Annual Career Fair and Digital Talent Hub. Subscribe to Vector’s mailing list to find out about our events!



# You're invited to Vector's highly anticipated AI Summit & Career Fair!

**When:** 9:30 AM - 5:30 PM EST

**Where:** The Carlu, 444 Yonge St,  
Toronto

**Format:** In-person (Talks hybrid)



**You won't want to miss learning about these trending themes:**

**Keynote 1** - Mastering the Art of Generative Imagination

**Keynote 2** - Safeguarding the Digital Realm with AI

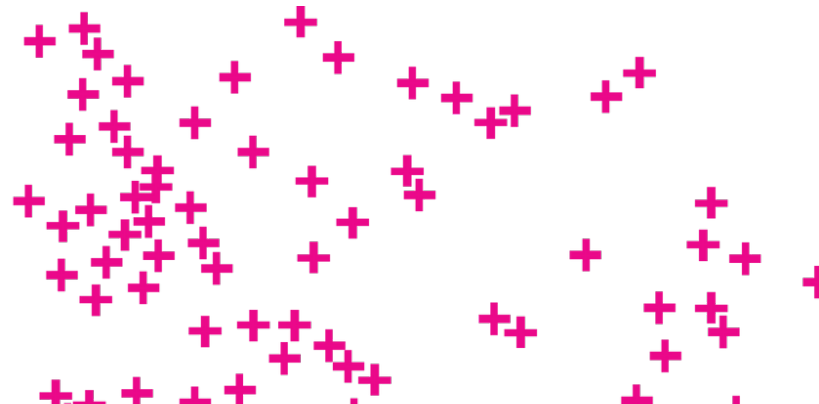
**Keynote 3** - AI to reclaim Indigenous languages

**Panel** - Navigating responsible and ethical adoption of AI across industries

**Are you ready for your next internship or career?**

Leading Canadian companies at the Career Fair are looking to recruit top AI talent - just like you!

- + Accenture
- + Air Canada
- + Bell
- + CIBC
- + CN
- + Ellis Don
- + Freshbooks
- + Georgian
- + Private AI
- + PwC
- + RBC / Borealis AI
- + Roche
- + TD
- + Telus
- + Thomson Reuters



# How can you get involved at Vector?

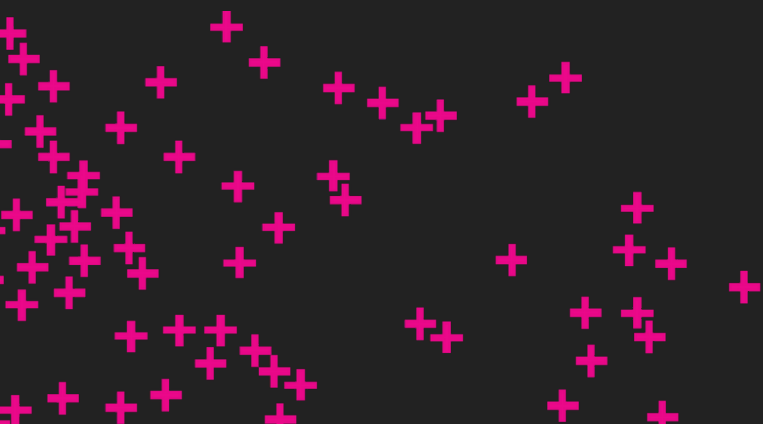


[Sign up](#) for our mailing list to  
hear about upcoming  
opportunities and events!



Questions or feedback?

Email [aimasters@vectorinstitute.ai](mailto:aimasters@vectorinstitute.ai)



# UWATERLOO STUDENT LIFE & MATH GRAD STUDENT ASSOCIATION

David Awosoga

MMath DS Student  
Graduate Data Science Program Ambassador



# Who am I?

## David Awosoga

- **Program:** MMath DS Student - Fall 2022 cohort, Spring 2024 expected graduation
- **Research:** Applications of Bayesian modelling and spatiotemporal data analysis in sports – supervised by Dr. Samuel Wong
- **Previously:**
  - BSc. Applied Statistics ('22) from University of Lethbridge, Alberta, Canada
  - Sports Data Science Intern with Canadian Sport Institute Ontario, Toronto, Canada



# What will I talk about?

## Outline

- Math GSA
- Course Selection
- Co-op / Research
- Scheduling Tips
- Academic Integrity
- Outside of the Classroom



# Math GSA

## Overview

- Objectives (in the Faculty of Mathematics)
  - Providing a forum for the voices of all graduate students
  - Representing the interests of graduate students
  - Promoting, directing and coordinating activities that will benefit the members.
- Duties as a MMATH/MDSAI Program Ambassador
  - Arranging events for students of the program
- Run for GSA Representative!
  - An email will be sent out for the election (September 2023) from Math GSA





# Past Events

## Escape Room Challenge at KW Escape



# Course Selection

## My MMATH Course Structure

| Fall 2022  | Winter 2023   | Summer 2023 –<br>Spring 2024 |
|--|---|------------------------------|
| <b>STAT 946</b><br>Graphical Models &<br>MCMC Method | <b>STAT 847</b><br>Exploratory Data<br>Analysis             | <b>Thesis Research</b>       |
| <b>STAT 842</b><br>Data Visualization                | <b>CS 631</b><br>Data Intensive<br>Distributed<br>Analytics |                              |

# Course Selection

## Example MDSAI Course Structure

| Fall 2022   | Winter 2023  | Summer 2023  | Fall 2023  |
|---|--|--------------|--|
| <b>STAT 845</b><br>Statistical Concepts for<br>Data Science | <b>STAT 847</b><br>Exploratory Data Analysis         | <b>Co-op</b> | <b>CS 794</b><br>Optimization for Data<br>Science    |
| <b>STAT 842</b><br>Data Visualization                       | <b>CS 680</b><br>Introduction to Machine<br>Learning |              | <b>STAT 841</b><br>Classification<br>(Elective)      |
| <b>CS 651</b><br>Data Intensive<br>Distributed Computing    | <b>CS 679</b><br>Neural Networks<br>(Elective)       |              | <b>STAT 844</b><br>Advanced Regression<br>(Elective) |



# Co-op

## Process

- 5 cycles with each cycle consisting of:
  - Job postings
  - Applications
  - Shortlisting and interviews
  - Ranking and matches
- These Cycles start in the previous term itself. (for example, if your Co-op is in Summer 2024, these cycles would start in Jan 2024 (Winter semester))
- <https://uwaterloo.ca/co-operative-education/>

|   |                                      |  |
|---|--------------------------------------|--|
| CHECK ALL<br><b>Important dates</b>                           | HOW TO<br><b>Find your co-op job</b> | ACCESS<br><b>WaterlooWorks</b>   |
| LEARN ABOUT<br><b>Co-op work term updates due to COVID-19</b> |                                      | WE HAVE<br><b>Jobs and funding available through various programs!</b> |

|  |   |
|--|---|
|  <p>Need help with co-op?<br/><b>Connect with your co-op advisor</b></p> <p><b>LEARN MORE</b></p> |  <p><b>Supports and resources</b></p> <p><b>LEARN MORE</b></p> |
|--|---|

Events

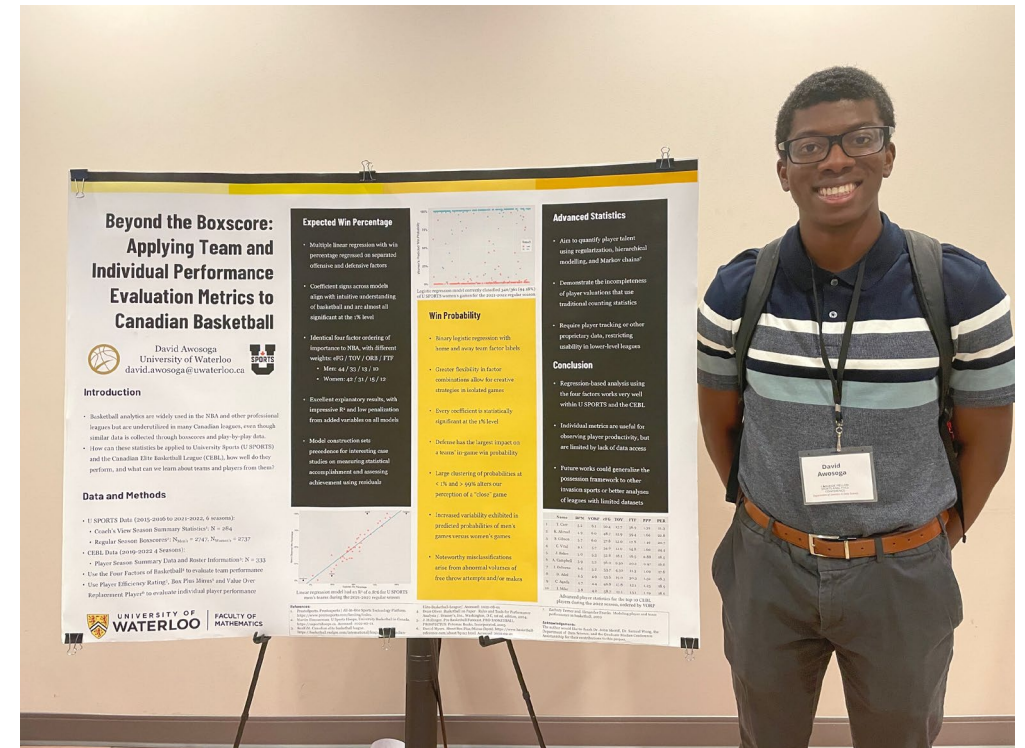
|                               |                        |                                 |
|-------------------------------|------------------------|---------------------------------|
| <b>Employer info sessions</b> | <b>Career/Job Fair</b> | <b>GCA workshops and events</b> |
|-------------------------------|------------------------|---------------------------------|



# Research

## From My Experience

- Maintain consistent communication with your supervisor to ensure that you are on constantly on track with research goals.
- The supervisor-student relationship is one of the most important aspects of your graduate studies, put effort into it.
- Take advantage of conferences and side projects to increase your breadth of knowledge and technical skills.



# Scheduling Tips

## Time Management & Work Options

- 3 courses per semester: demanding coursework.
- Make sure to attend classes and plan your schedule according to the assignment due dates.
- Working Part-time: Not recommended (at least for the first semester). Gauge the course load, your schedule and decide on working part time in the later semesters.
- TA opportunities are available (although not guaranteed for MDSAI students).
- Second semester (Winter 2024), will be the heaviest because of the course load (assignments, exams, quizzes) paired with co-op applications and interviews.



# Academic Integrity

## What is and isn't allowed?

- Strict Policy for Academic Integrity (Policy 71)
- <https://uwaterloo.ca/academic-integrity/>
- **Do NOT** to plagiarize in any way. Cite original work wherever required. (In code, reports, papers, etc)
- **ASK** if you are unsure of doing something. You can ask the Course Instructor, Graduate Coordinator or the Program Director.
- **READ** the policy to clear up all the doubts. For example, even reusing your own work without citation counts as plagiarism.

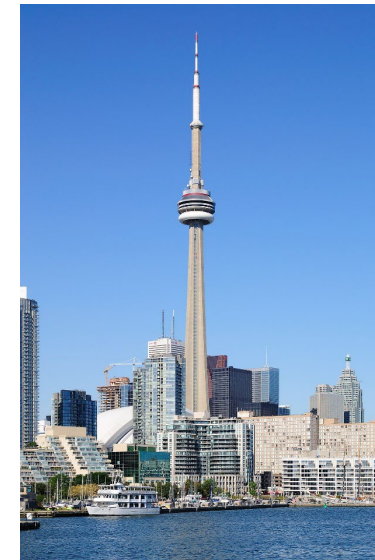




# Outside of the Classroom

## Things to do in the K-W Region

- GSA activities at the Graduate House (Meetups, BBQ nights, Trivia)
- Waterloo and Kitchener: Pubs, Bars, Parks and Trails
- Intramural Sports and Campus Clubs
- Winter Activities: Ice Skating rink at Waterloo Public Square and at Columbia Ice Field (CIF) in the University. Skiing and Snowboarding at Chicopee Ski Resort in Kitchener.
- Toronto: ~1.5 hours by car or ~2.5 hours by Go Transit



# UNIVERSITY OF **WATERLOO**



## **FACULTY OF MATHEMATICS**

ENJOY YOUR TIME HERE! MAKE THE MOST OF EVERY OPPORTUNITY AND REACH OUT  
FOR ANY SUPPORT 😊

# NEXT STEPS

Marie Kahkejian  
Graduate Program Administrators  
*Data Science Graduate Program*



# HOW TO CONNECT WITH YOUR COHORT

## Join the Facebook Group

[Graduate Data Science @ Waterloo - Fall 2023](#)



SCAN ME

# NEXT STEPS

1. Courses officially started this Tuesday, September 6<sup>th</sup>! You should be enrolled in 3 courses by now (+ remedials if applicable)

2. MDSAI full-time co-op: Mark your calendar and register for ALL co-op workshops and

| Workshop  | Date                   | Time         |
|---|------------------------|--------------|
| <a href="#">Co-op Documents (Résumés, cover letters) workshop</a> | Wednesday September 27 | 1:30-3:00 PM |
| <a href="#">Interviews workshop</a>                               | Wednesday October 4    | 1:30-3:00 PM |
| <a href="#">Co-op Education process &amp; strategy workshop</a>   | Wednesday October 18   | 1:30-3:00 PM |

3. All DS Students: Mark your calendar and attend the MANDATORY Ethics Workshops

| Workshop          | Date Options:<br>Attend 1 date per workshop                  | Time                                      |
|-------------------|--|---|
| Ethics Workshop 1 | Monday, Sep 25 <sup>th</sup><br>Friday, Sep 29 <sup>th</sup> | 1:30pm – 4:30pm ET<br>9:00am – 12:00pm ET |
| Ethics Workshop 2 | Monday, Oct 2 <sup>nd</sup><br>Friday, Oct 6 <sup>th</sup>   | 1:30pm – 4:30pm ET<br>9:00am – 12:00pm ET |
| Ethics Workshop 3 | Monday, Oct 16 <sup>th</sup><br>Friday, Oct 20 <sup>th</sup> | 1:30pm – 4:30pm ET<br>9:00am – 12:00pm ET |



# NEXT STEPS

## 3. Complete online mandatory training modules

| Delivery                      | Course ID   | Duration   |
|-------------------------------|---|------------|
| Online – Safety Office        | <a href="#">Employee Safety Orientation (SO1001)</a>                  | ~60 min    |
| Online – Safety Office        | <a href="#">WHMIS 2015 (SO2017)</a>                                   | ~45-60 min |
| Online – Safety Office        | <a href="#">Workplace Violence Awareness (SO1081)</a>                 | ~60 min    |
| Online – LEARN (for TAs only) | <a href="#">Accessibility Training module</a>                         | ~30 min    |
| Online – LEARN                | <a href="#">Graduate Academic Integrity Module*</a><br>*on transcript | ~1-2 hours |

## 4. Check your UW email and update Quest personal information

## 5. International students:

- Connect with The Centre for help with immigration documents, SIN, health insurance, etc.
- Apply for a co-op work permit if you haven't already and see more information [here](#).



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**WATERLOO**



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