



Data Science Certificate for U of T Doctoral Students

Information Session – July 28, 2025

Contact: courses.dsi@utoronto.ca

About Us

A cross university,
multidisciplinary hub
for data science at U of T.

Mission:

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



Research



Training



Internships



Upskilling



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Introductions

- Professor Rohan Alexander, Director, Technical Skills & Curriculum
- Jennie Moe, Program Manager
- Kasra Vakiloroyaei, Learner Recruitment Officer



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Agenda

- Certificate Overview
- Curriculum
- Participant Expectations
- Schedule
- Eligibility Criteria
- Application Process
- Q & A



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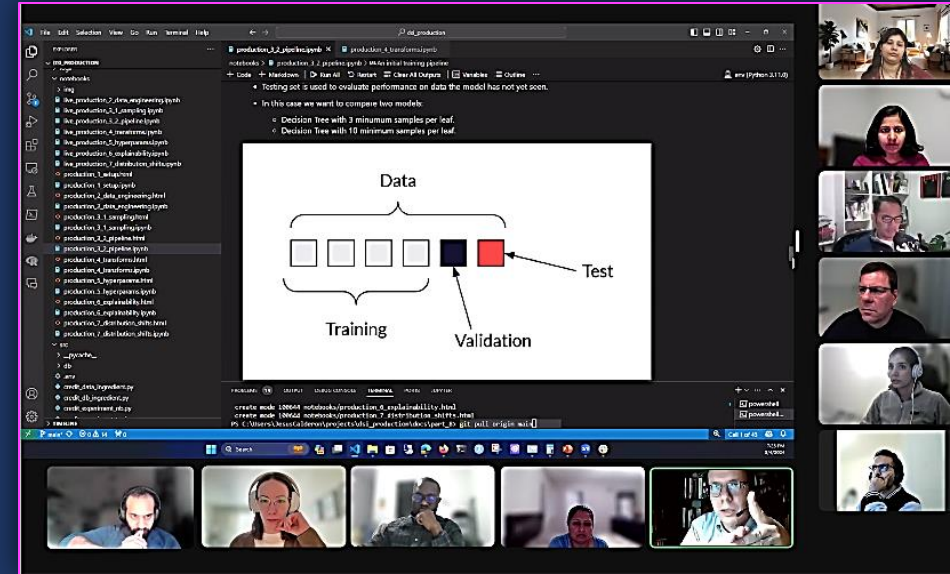


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Upskilling for Doctoral Students in Data Science

- 20-week certificate that provides:
 - Technical Skills training in data science and AI
 - Collaborative learning with other U of T doctoral students
 - Flexible learning opportunity designed to cater to doctoral schedules
 - Branded certificate to include on your resume or LinkedIn

Collaboration of the School of Graduate Studies and Data Sciences Institute



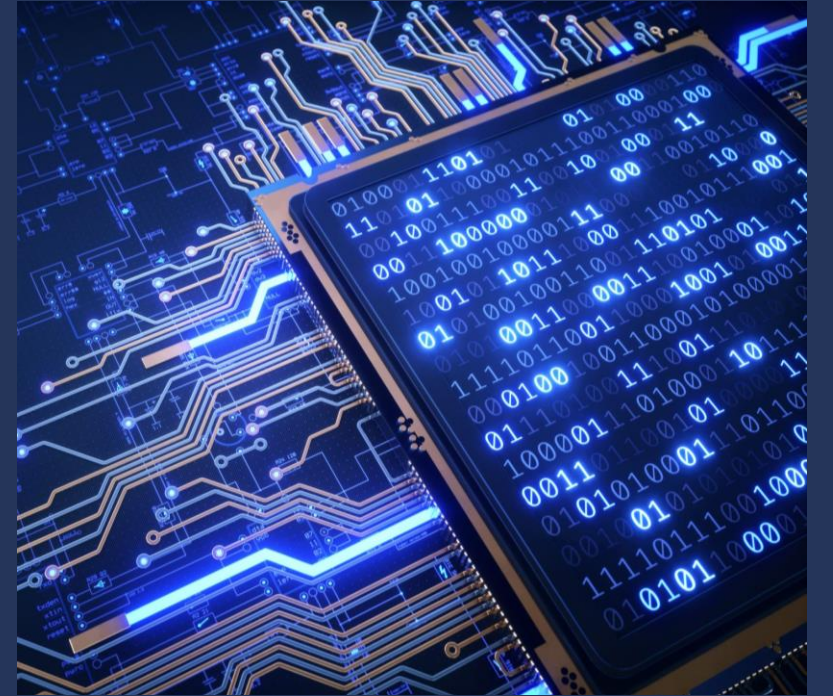
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What is Data Science?



- Interdisciplinary field combining statistics, math, computer science, and domain expertise to analyze structured and unstructured data
- Employs scientific methods and visualization tools to interpret data, communicate insights, and solve complex real-world problems.



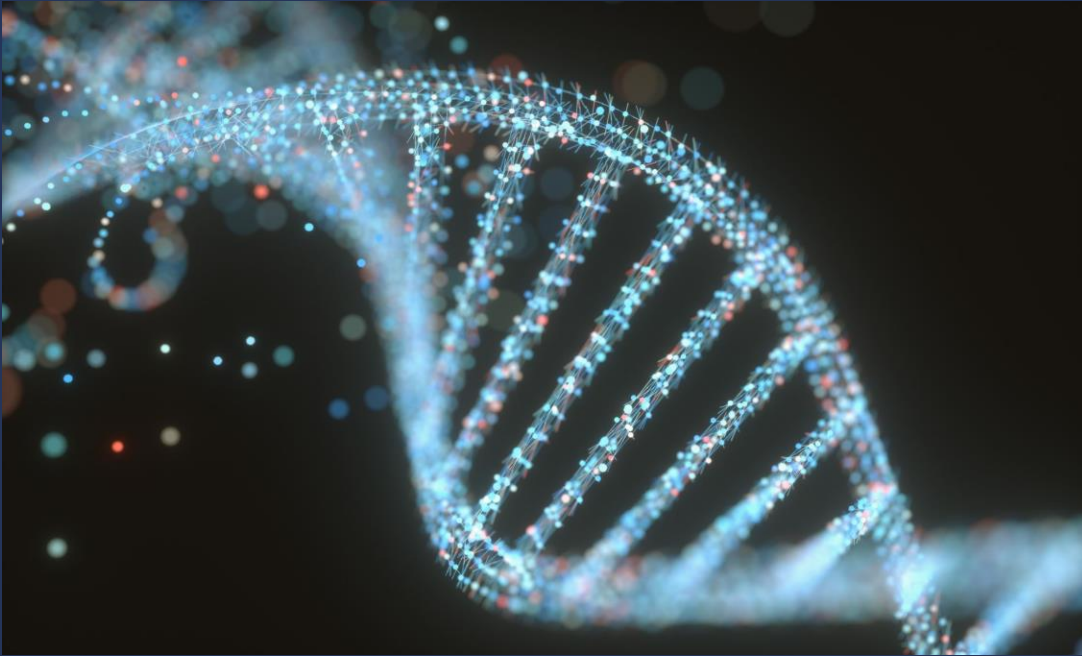
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Real-World Applications – Research

Genomic Research



Climate Science



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Real-World Applications – Industry

Financial Analysis



Marketing



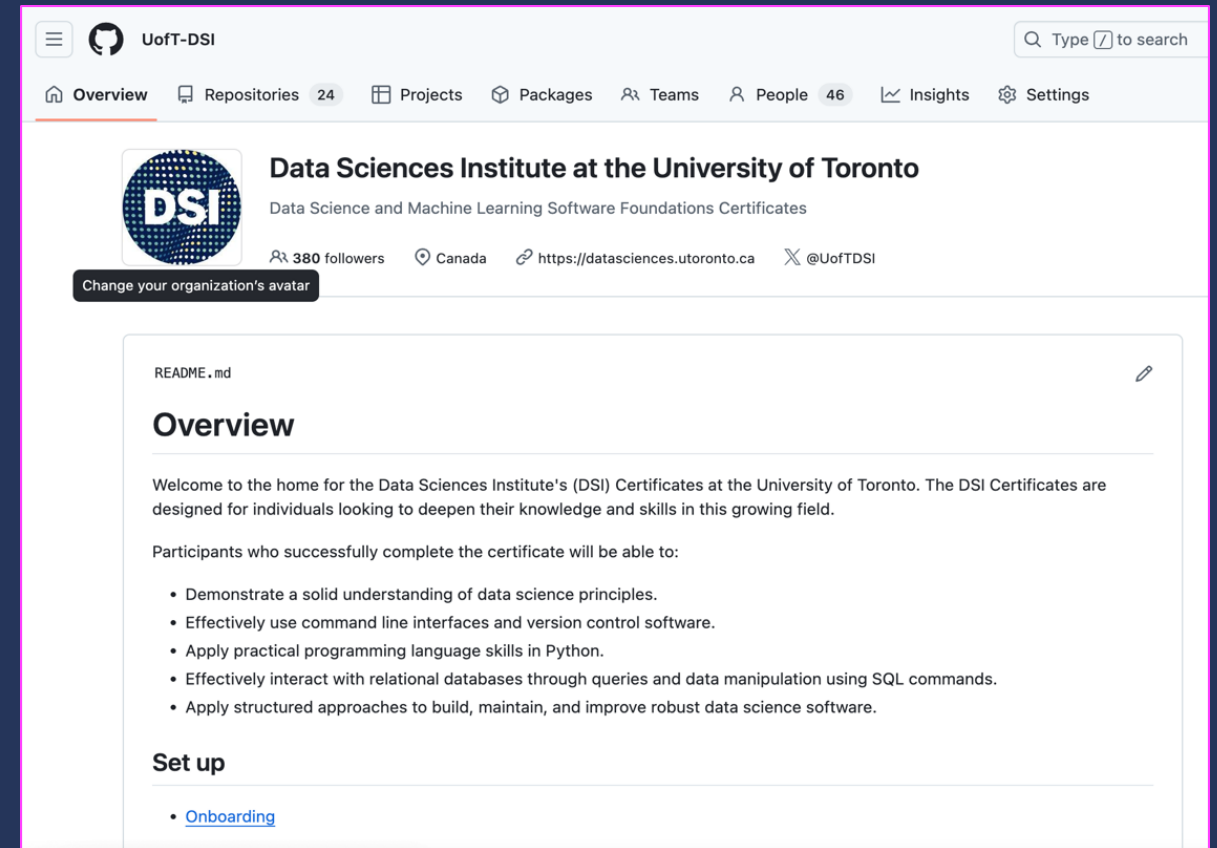
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Delivery and Assessment

- Facilitated through GitHub
- Assessed based on the achievement of learning outcomes
- Real world applications to improve your portfolio
- Developed and delivered with industry and academic partners



Curriculum



- **Unix Shell and Git**
 - Participants gain proficiency in shell commands, file navigation, Git repositories, and collaborative workflows
- **SQL**
 - Participants learn essential SQL skills, dataset ingestions, query design, relational database management, data modeling, and data privacy adherence
- **Python**
 - Participants are introduced to Python fundamentals, especially functions, object-oriented programming, and NumPy for data analysis.



Curriculum

- **Linear Regression, Classification, and Resampling**
 - Participants learn statistical modeling using regression and classification as well as bootstrap methods
- **Sampling**
 - Participants learn the essentials of sampling, probability, and survey methodology
- **Visualization**
 - Participants learn how to use data visualization to effectively communicate insights and tell a story
- **Deploying AI**
 - Apply Large Language Models (LLMs) to real-world problems; evaluate outputs and explore practical AI solutions.



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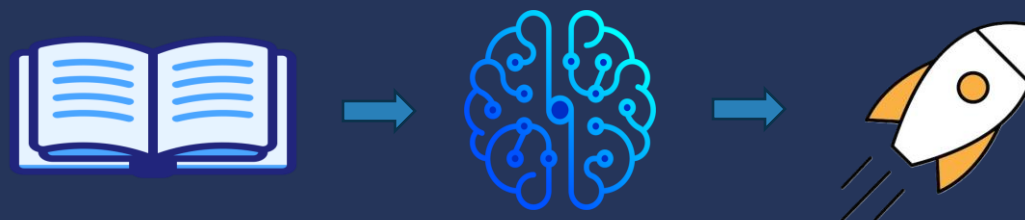
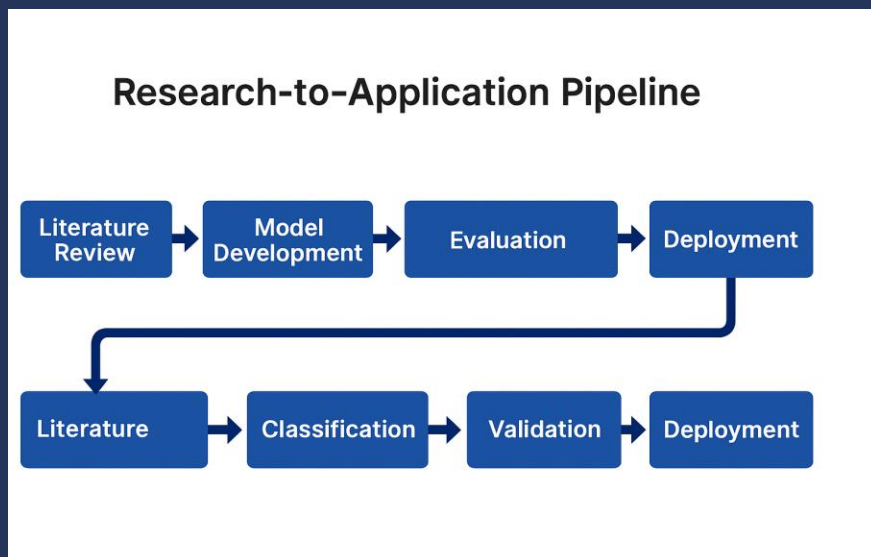


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Turning AI Theory into Impact

Applying LLMs in Real World Applications

- Learn to apply Large Language Models (LLMs) to real-world applications.
- Build a foundational understanding of LLMs, learn how to evaluate their outputs, and deploy AI-driven solutions that bridge the gap between research and practical use.



- ✓ Rapid growth in LLM applications (ChatGPT, Copilot)
- ✓ High industry demand for practical AI skills
- ✓ Bridges research and real-world tools



Q & A with Prof. Rohan Alexander

School of Graduate Studies



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Participant Expectations



- Evaluation and Completion:
 - Assessments evaluated based on learning outcomes – complete/incomplete
 - Feedback provided
 - Must complete ALL modules to receive certificate
 - Completion is defined by your Technical Facilitator
- Deadlines and Attendance:
 - Extensions require pre-due-date requests
 - No extensions beyond one week after module ends
 - Notify your Technical Facilitator of absences

Schedule

- Sessions are in a online, synchronous format
- A typical week involves:
 - Tuesday & Thursday: 3 – 5:30 pm
 - Optional work periods Friday afternoons: 1- 2:30 pm
- Session 2: September 30 –Feb 24, 2026
 - *Applications now open!*



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Eligibility Criteria



- U of T doctoral students enrolled full-time and in good standing
- Doctoral students can be from a range of disciplines – social sciences, humanities and sciences
- The Certificate is **NOT** appropriate for doctoral students in computer science, statistics, or mathematics
- There is no expectation of any prerequisites as the Certificate is designed for non-computational learners; no prior knowledge of data science required



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Application Process

- Applications are open now
- Scan the QR Code to apply
- Complete the application by August 25, 2025 @ 11:59 PM



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Application Process – Overview



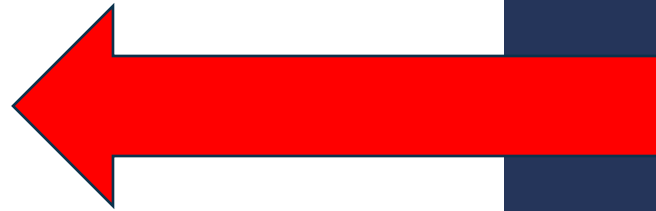
Data Science and Machine Learning Software
Foundations Certificates

Start application



Data Science Certificate for U of T Doctoral
Students

Start application



Start Here



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Application Process – Start Here



My applications → Data Science Certificate for U of T Doctoral Students → Start application

All questions must be answered, unless marked optional.

Start here Applicant Information Applicant Experience

🔗 ⓘ Data Science Certificate for U of T Doctoral Students (Start Here) ▾

Competition

Data Science Certificate for U of T Doctoral Students

📄 Download blank application PDF for reference

Title ⓘ

Kasra Vakiloroyaei

Save + next Cancel

Don't forget to click Save+Next

Enter your name here



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Application Process – Applicant Info

A screenshot of a web application form titled 'Data Science Certificate for U of T Doctoral Students (Applicant Information)'. The form has three tabs: 'Start here', 'Applicant Information' (which is highlighted with a red box), and 'Applicant Experience'. Below the tabs, there is a heading with an information icon and a dropdown arrow. A note states: 'On this page, you are filling out questions related to the applicant's information. Please read the instructions for each question carefully.' The form contains five input fields, each with a label, a required indicator (a circle with an exclamation mark), and a placeholder text: 1. 'Last' with placeholder 'Please enter the applicant's last name.' 2. 'First' with placeholder 'Please enter the applicant's first name.' 3. 'Email' with placeholder 'Please enter the applicant's email address.' 4. 'U of T Student ID' with placeholder 'Please enter the applicant's U of T Student ID.' 5. 'Year of Studies' with placeholder 'Please select the applicant's year of studies.' The 'Year of Studies' field is a dropdown menu. A back arrow is visible in the bottom left corner of the form area.

Application Information to have Prepared:

- First & Last Name
- Email address (preferably U of T email address)
- U of T Student Number (**Not UtorID**)
- Year of Study
- University of Toronto Division of Study
- Thesis Supervisor name
- Thesis Topic (Optional)

Application Process – Applicant Experience



Start here Applicant Information **Applicant Experience**

🔗 ⓘ Data Science Certificate for U of T Doctoral Students (Experience) ▾

On this page, you are filling out questions related to the applicant's experience with data science. Please read the instructions for each question carefully.

Notes

- These questions will not be used to determine eligibility.

Please describe your level of familiarity with linear algebra, calculus, and basic probability and statistics: ⓘ

Please select the applicants familiarity with linear algebra, calculus, and basic probability and statistics.

Do you have any programming experience? Select all that apply. ⓘ

Please select all checkboxes that apply to the applicant's programming experience.

☐ No programming experience

☐ Yes, Python

☐ Yes, R

☐ Yes, C/C++

☐ Yes, Java

Save + close Preview **Submit application**

Application Experience:

- Interested in understanding the level of familiarity with respect to related topics
- Interested in understanding any programming experience from past work/research



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Application Process – Registration

- A number of eligible applicants who complete the application will receive invitations to register and pay the certificate fee
- Registration will occur via the Temerty Faculty of Medicine registration portal



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Q & A



Application Deadline: August 25, 2025



Send us your questions at courses.dsi@utoronto.ca



Apply now!

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