School of Graduate Studies

UNIVERSITY OF TORONTO

DATA SCIENCES INSTITUTE

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

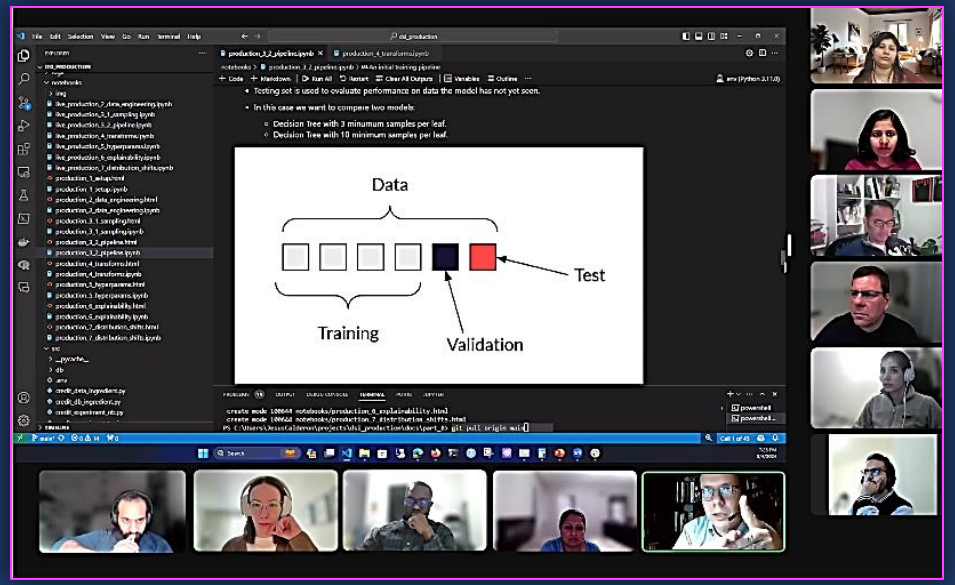
- Professor Rohan Alexander, Director, Technical Skills & Curriculum
- Jennie Moe, Program Manager
- Kasra Vakiloroayaei, Learner Recruitment Officer

Agenda

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

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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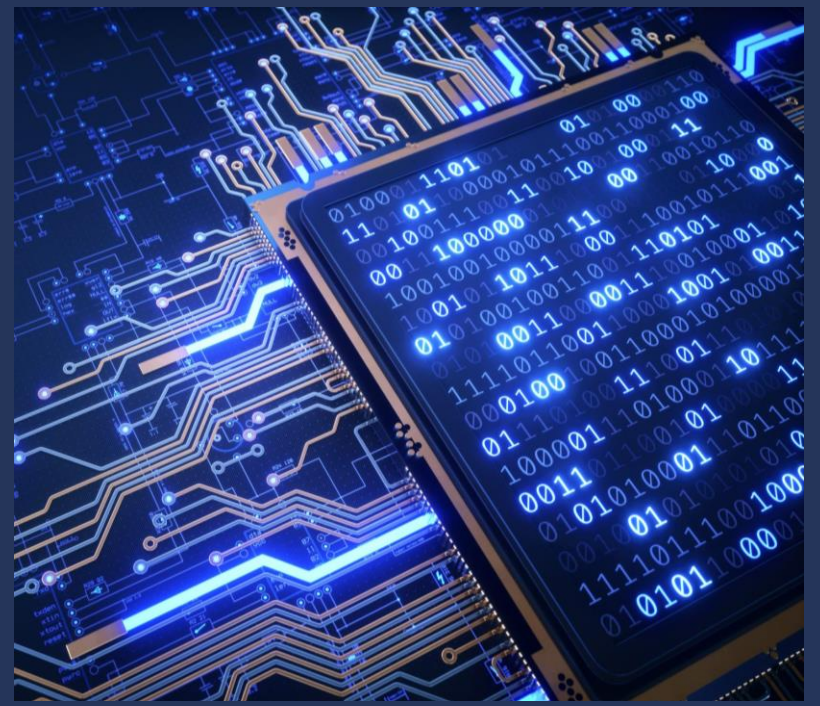
What is Data Science?

- 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

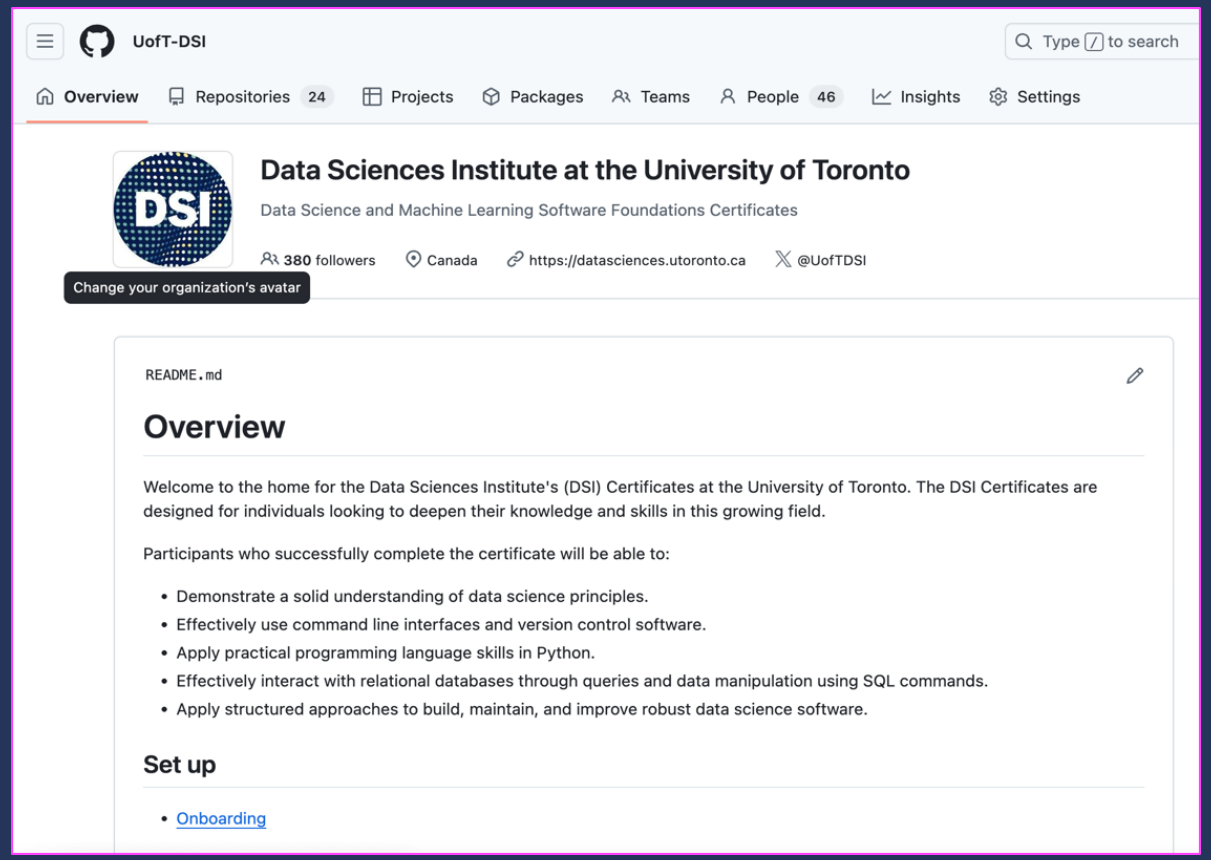
Real-World Applications – Industry

Financial Analysis

Marketing

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



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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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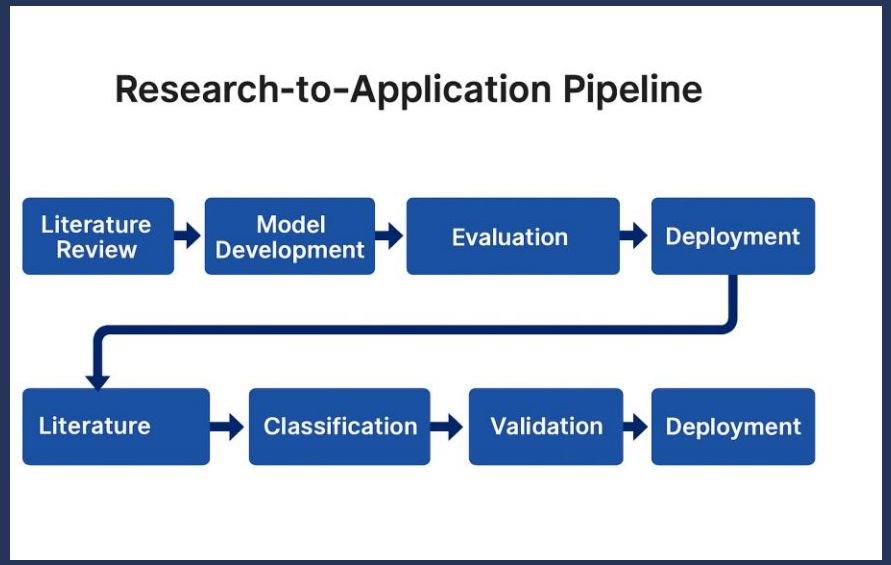
Turning AI Theory into Impact

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

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Q & A with Prof. Rohan Alexander

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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

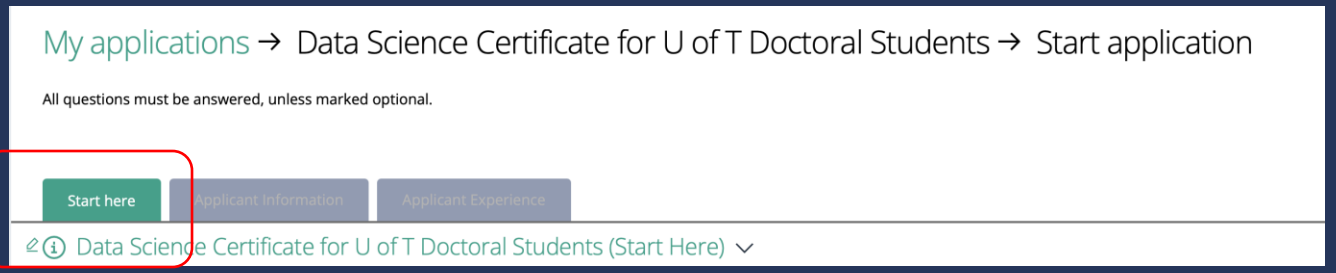
Start application

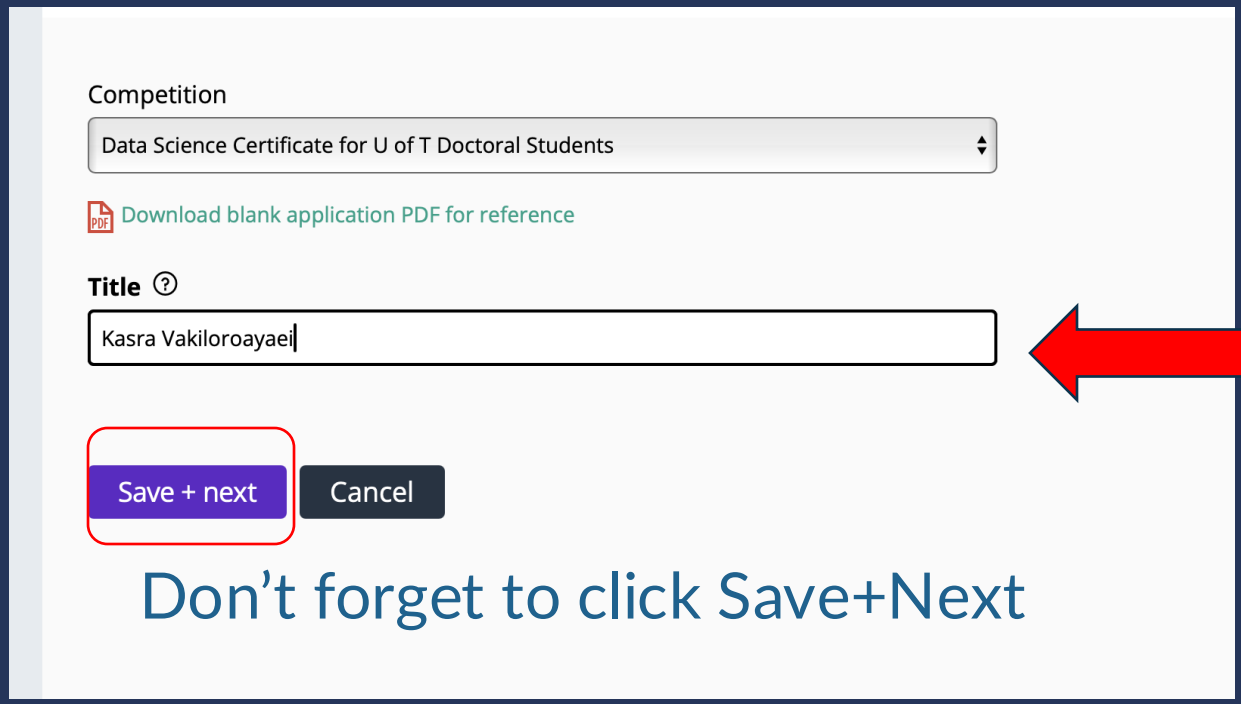
Data Science Certificate for U of T Doctoral Students

Start application

Start Here

Application Process – Start Here





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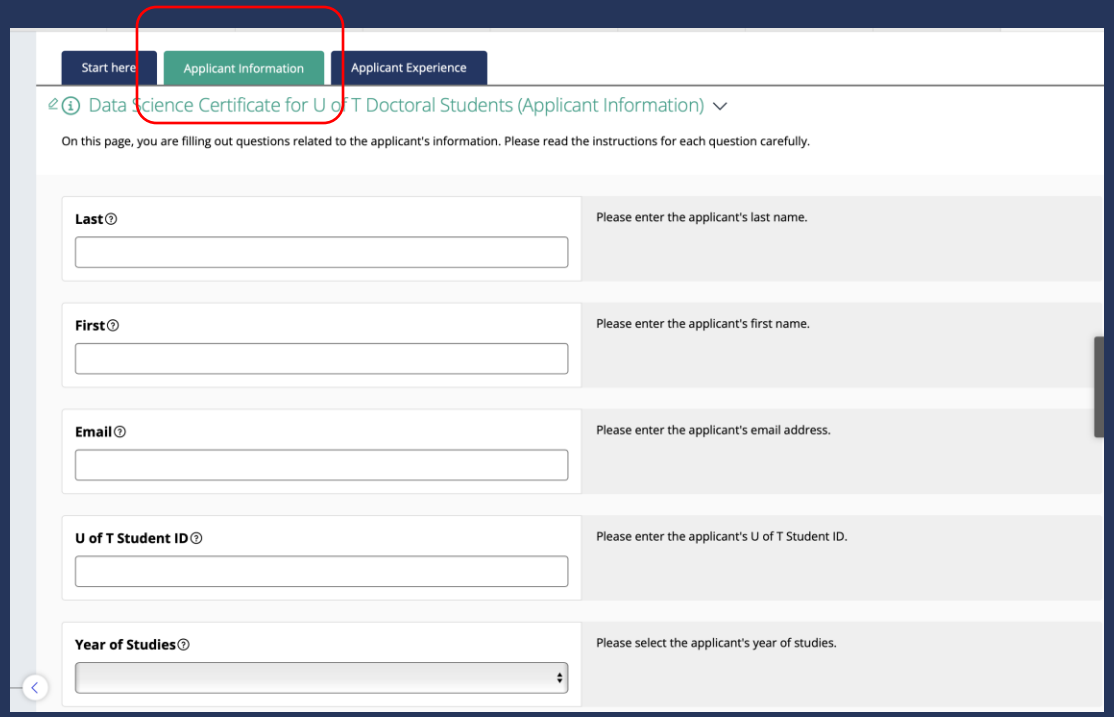
Application Process – Applicant Info



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)

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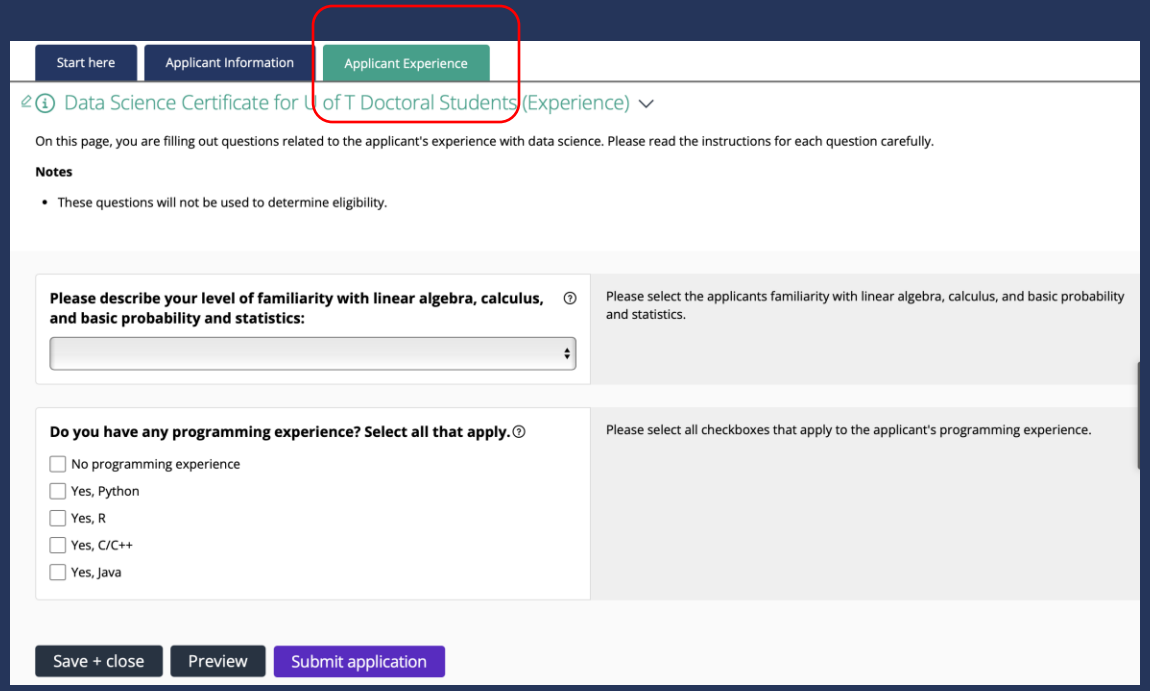
Application Process – Applicant Experience



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

Q & A

Application Deadline: August 25, 2025

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

Apply now!

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