

# dexterbarrows

curriculum vitae

## Education

- 2019–present    **Doctor of Philosophy · Mathematical Modelling**    Ryerson University
- Research:    Stochastic biochemical networks
- 2014–2016    **Master of Science · Applied Mathematics**    McMaster University
- Thesis title:    *A Comparative Study of Techniques for Estimation and Inference of Non-linear Stochastic Time Series*
- Supervisor:    Dr. Ben Bolker
- Repository:    <https://github.com/dbarrows/epidemic-forecasting.git>
- 2010–2014    **Bachelor of Science · Mathematics / Computer Science**    Ryerson University
- Thesis title:    *Software for Multi-level Monte-Carlo Simulation of Stochastic Biochemical Kinetics*
- Supervisor:    Dr. Silvana Ilie
- Repository:    <https://github.com/dbarrows/biochemical-kinetics.git>

## Experience

- 2017–2019    **Software Developer**    7D Surgical
- Designed software components for medical embedded systems.
  - Optimised algorithms for GPU-accelerated 3D image processing.
- 2015–2017    **Research Assistant**    Biophotonics and Bioengineering Laboratory (BBL)
- Developed algorithm for semi-automatic vascular segmentation.
  - Built system for GPU-accelerated real-time Doppler OCT raw data processing.
- 2014–2016    **Teaching Assistant**    McMaster University
- Ran tutorials and labs, and invigilated and graded tests and exams.
  - Courses: Introduction to Scientific Computing and Calculus for Life Sciences.

2013

## Data Analyst

Canadian Society of Association Executives (CSAE)

- Performed data sourcing, verification, and analysis.

## Publications

2019

*Optical coherence tomography for dynamic axial correction of an optical end-effector for robot-guided surgical laser ablation* Optical Engineering

Authors: J Jivraj, C Chen, **D Barrows**, VXD Yang

Link: <https://doi.org/10.1117/1.0E.58.5.054106>

2019

*Optimization of laser osteotomy at 1064 nm using a graphite topical absorber and a nitrogen assist gas jet* Biomedical Optics Express

Authors: J Jivraj, **D Barrows**, X Gu, VXD Yang

Link: <https://doi.org/10.1364/B0E.10.003114>

2017

*Graphics processor unit acceleration enables realtime endovascular Doppler optical coherence tomography imaging* SPIE Photonics West

Authors: **D Barrows**, B Vuong, K Lee, J Jivraj, VXD Yang

Link: <https://dx.doi.org/10.1117/12.2254930>

2017

*Graphics processor unit acceleration enables realtime endovascular Doppler optical coherence tomography imaging: development and validation* SPIE Photonics West

Authors: **D Barrows**, JM Ramjist, B Vuong, K Lee, J Jivraj, VXD Yang

Link: <https://doi.org/10.1117/12.2256623>

2017

*Assessment of hemodynamics of intracranial aneurysms using Doppler optical coherence tomography in patient specific phantoms: preliminary results* SPIE Photonics West

Authors: JM Ramjist, J Jivraj, **D Barrows**, B Vuong, R Wong, VXD Yang

Link: <https://doi.org/10.1117/12.2256532>

## Certifications

2018-present

### Data Science

University of Toronto

Modelling, visualisation, big data, and machine learning.

2017

**LBR iiwa - Commissioning and Programming**

KUKA College

Operation and programming of the KUKA LBR iiwa personal robotic assistant, including safe interaction, manual operation, basic maintenance, authoring robotic applications, and debugging.

## Leadership

2013-2014

**President, Mathematics Course Union (MCU)**

Ryerson University

- Acted as a liaison between students, the Department of Mathematics, and the Faculty of Science.
- Representative on Departmental Council: Curriculum Advising Committee, By-law Revising Subcommittee
- Steering Committee Member, Ryerson Science Society (RSS)