

Rohan Hitchcock

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Highly motivated graduate mathematics student with a passion for teaching and research. Has a strong interest in mathematics and computer science research, particularly projects which blend abstract areas with practical applications, and is currently beginning a masters' thesis applying singular learning theory and algebraic geometry to deep learning. Has experience teaching as a computer science and mathematics tutor at the University of Melbourne, and has further developed teaching and mentorship skills by initiating the development of a seminar series for first-year mathematics students.

Education

Master of Science (Mathematics and Statistics) Jul. 2020 – Jul. 2022

The University of Melbourne

- Commencing thesis in algebraic geometry, singular learning theory, and deep learning under the supervision of Dr Daniel Murfet.
- Specialising in pure mathematics, with additional study in statistics and discrete mathematics.

Bachelor of Science (Mathematics and Statistics) Feb. 2017 – Jul. 2020

The University of Melbourne

- Specialised in pure mathematics, with additional study in discrete mathematics and probability at a third-year level.

Diploma in Computing Feb. 2017 – Jul. 2020

The University of Melbourne

- Completed study in artificial intelligence, machine learning and theoretical computer science at a third-year level.

Publications

Original Refereed Publications

- Yu Kato et al., “Display of Native Antigen on cDC1 That Have Spatial Access to Both T and B Cells Underlies Efficient Humoral Vaccination”, *The Journal of Immunology*, vol. 205, no. 7, Art. no. 7, Oct. 2020, doi: 10.4049/jimmunol.2000549.
 - Wrote simulations of biological processes to support experimental data. Adapted legacy image processing code.

Other Publications

- Rohan Hitchcock, John Bamberg and Michael Giudici, “Alternative construction of the groups of type E_6 ”, *AMSI Vacation Research Scholarship and AMSI Connect Conference*, 2020.
 - Performed research, wrote report and presented project at AMSI Connect conference.

Teaching Experience

Tutor (Computer Science, Mathematics) Jul. 2020 – Present

The University of Melbourne

- Taught tutorials for subjects on artificial intelligence, theoretical computer science, and introductory calculus.
- Wrote programs to automatically test students' assignment submissions, and marked written assignments.

Volunteer Seminar Organiser (Mathematics)

Feb. 2020 – Jul. 2021

The University of Melbourne

- Running an ongoing seminar program for undergraduate mathematics students which has included three semester-long seminar series' on cryptography, game theory, and neural networks.
- Designed the curriculum for seminars.
- Responsible for administration of seminars, including finding speakers and running the seminar meetings.
- Mentored students as they prepared their talks.

Demonstrator (Computer Science)

Feb. 2018 – Jun. 2018

The University of Melbourne

- Taught practical classes which introduced students to programming in Python.

Research Experience

Research Assistant

Jul. 2018 – Aug. 2020

The Peter Doherty Institute, The University of Melbourne

- Worked on a research project which aimed to determine a stochastic model for immune cell motion in the liver from microscope imaging data.
- Used Python and scientific libraries such as NumPy and SciPy to fit imaged blood vessels with a connected network of curves, and analysed cell motion through these vessels.
- Wrote high-performance simulations of cell motion using C with OpenMP.
- Contributed to a paper by providing supporting simulation data, and rewriting legacy image processing code.

AMSI Vacation Research Scholarship

Dec. 2019 – Jan. 2020

*The University of Western Australia**Australian Mathematical Sciences Institute*

- Completed 6 week research project under the supervision of Dr John Bamberg and Prof. Michael Giudici, resulting in a report and presentation at the AMSI Connect conference.
- Reviewed a construction of the groups of type E_6 as a subgroup of the automorphisms of a particular vector space, and compared this to the historical construction.

Other Experience

Assistant Customer Experience Manager, Shift Supervisor

2016

McDonald's Australia

- Implemented training program to train existing staff in a new customer service role.
- Responded to customers who had lodged complaints with store.
- Managed shifts, which included planning staff roles, setting individual targets for staff in order to meet shift-level KPIs, and cash-handling and food safety procedures.

References available upon request.