Jackie Lok

Curriculum vitae — Last updated March 2023

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Education

Princeton University, *Princeton, NJ, USA* 2021–Present
PhD in Operations Research and Financial Engineering
Adviser: Elizaveta Rebrova

UNSW Sydney, *Sydney, Australia* 2020
Bachelor of Science (Honours) in Pure Mathematics
with First Class Honours and the University Medal
Supervisor: Catherine Greenhill
Honours thesis: *Markov chains, mixing times, and cutoff*
WAM: 97.16/100

UNSW Sydney, *Sydney, Australia* 2016–2019
Bachelor of Actuarial Studies (Co-op) in Mathematics with Distinction
WAM: 95.65/100

Wharton School, University of Pennsylvania, *Philadelphia, PA, USA* 2017
International Exchange Semester, GPA: 4.00/4.00

Research Interests

My main interests are in probability (in particular, high-dimensional/discrete probability and random matrices), randomised algorithms, and mathematical data science and statistics.

In my research, I study the properties and behaviour of random mathematical structures and algorithms, and use these insights to develop tools and models that are supported by theoretical guarantees and allow us to better work with and understand large-scale, complex data.

Awards & Honours

- Quad Fellowship, Schmidt Futures 2023
- Richard Stillwell '21 *24 and Agnes Newhall Stillwell Fellowship, Princeton University 2021–2022
- University Medal in Pure Mathematics, UNSW Sydney 2020
- H.C. & M.E. Porter Memorial Scholarship, UNSW Sydney 2020
- The Faculty of Science Prize for Honours Year Science, UNSW Sydney 2020
- The George Szekeres Prize, UNSW Sydney 2019
- The Head of School's Prize, UNSW Sydney 2019
- UNSW Co-op Scholarship in Actuarial Studies 2016–2019
- UNSW Scientia Scholarship 2016–2019
- Harry Manson International Exchange Scholarship, UNSW Sydney 2017

Teaching Experience

Princeton University, *Princeton, NJ, USA*

Assistant in Instruction, ORFE Department

Responsible for delivering weekly precepts, holding office hours, and grading problem sets and exams.

- ORF 350: Analysis of Big Data — Spring 2023
- ORF 387: Networks — Fall 2022

University of Melbourne, *Melbourne, Australia*

Academic Tutor, School of Mathematics and Statistics

Responsible for the delivery of weekly tutorials and assessment marking.

- MAST20004: Probability — Semester 1 2021

UNSW Sydney, *Sydney, Australia*

Academic Tutor, School of Risk and Actuarial Studies

Responsible for the delivery of weekly tutorials, examination and assessment marking, development of course materials, student consultations, and providing general course support.

- ACTL3162: General Insurance Techniques — Term 3 2020
- ACTL2102: Foundations of Actuarial Models — Term 2 2020
- ACTL2111: Financial Mathematics for Actuaries — Term 1 2020
- ACTL1101: Introduction to Actuarial Studies — Term 3 2019
- ACTL2102: Foundations of Actuarial Models — Term 2 2019
- ACTL3141: Actuarial Models and Statistics — Term 1 2019

Other Activities

Mentoring

- ORFE Senior Thesis Writer's Group, co-leader, *Princeton University* — 2022–Present
- Drop-in Centre Tutor, *School of Mathematics and Statistics, UNSW Sydney* — 2020

Talks and Presentations

- November 2022, graduate student probability reading group, Princeton University: "Matrix Concentration Inequalities via the Method of Exchangeable Pairs".
- November 2020, Honours presentation, UNSW Sydney: "Mixing times of Markov chains and the cutoff phenomenon".

Work Experience

icare, Actuarial Services Intern, *Sydney, Australia* — Aug 2018–Feb 2019

Supported the provision of actuarial advice and analysis for the NSW state insurer. Assisted with the reporting and valuation of outstanding claims liabilities, scenario analysis, preparation of financial budgets, claims experience monitoring, and the assessment of data quality and integrity.

Suncorp Group, Natural Perils Pricing Intern, *Sydney, Australia* — Feb 2018–Aug 2018

Collaborated in the research and development of a new natural peril pricing model in Python using analytical and machine learning techniques with insurance and geospatial datasets. Developed interactive tool using SAS and Python to identify and visualise exposure concentration risks as part of an automated monitoring pipeline.

MetLife Australia, Capital and Valuation Intern, *Sydney, Australia* — Nov 2016–Feb 2017

Assisted with financial reporting, reserving and scenario analysis for group life insurance.

Languages and skills

Languages

– English (native), Cantonese (fluent), Mandarin (beginner), German (beginner)

Computing

– Proficient with Python and R. Experience with other programming languages and statistical software including Java, MATLAB, SQL, and SAS.

– Competent with LaTeX.

– Experience with Microsoft Excel, Word, and PowerPoint.

Online courses

– Probabilistic Graphical Models Specialization (Coursera, Stanford University), 2021

– Deep Learning Specialization (Coursera, DeepLearning.AI), 2021

– Machine Learning (Coursera, Stanford University), 2018