

# Jackie Lok

CURRICULUM VITAE

LAST UPDATED MARCH 2023

Email: [jackie.lok@princeton.edu](mailto:jackie.lok@princeton.edu)  
Website: <https://jackielok.github.io/>  
Address: ORFE Department  
98 Charlton Street, Sherrerd Hall  
Princeton, NJ 08544, USA

## EDUCATION

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**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

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My main interests are in probability and its applications (particularly those involving high-dimensional and discrete probability and random matrices), randomised algorithms, and mathematical data science.

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

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– 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

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### 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

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### 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

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- 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

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### 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

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### 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  $\text{\LaTeX}$ .
- 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