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Chun Hei (Samuel) Lam

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I am a first year postgraduate at University of Oxford, joining the CDT Mathematics of Random Systems. Prior to my postgraduate studies, I was an undergraduate at Imperial College London, selected as a candidate for the MIT-Imperial exchange programme. My research focus on theory of deep learning. In my spare time, I also research on random matrices, dynamical systems and stochastic analysis.

EDUCATION

EPSC CDT Mathematics of Random Systems

September 2022 — Present

University of Oxford, UK

- To be transferred to DPhil programme in December 2023.

MSci Mathematics with a Year Abroad

October 2018 — July 2022

Imperial College London, London, UK

Overall: 88.55/100

- Thesis: *An exposition to the asymptotic equivalence of several nonparametric regression problems*
- Indicative course content: analysis, PDE, stochastic analysis and statistical theory.

MIT-Imperial Exchange Programme

September 2020 — June 2021

Massachusetts Institute of Technology, Cambridge, MA

Year 3: GPA 5.0/5.0

- As part of MSci Mathematics with a Year Abroad
- Indicative course content: Random Matrices, Non-Asymptotic Statistics, Stochastic Analysis, Bayesian Inference

A Level, General Certificate of Education

September 2016 — June 2018

HKCCCU Logos Academy, Hong Kong

GCE A Level: A*, A*, A*, A

- A* in Mathematics, Further Mathematics, Further Mathematics (Additional) and Chinese, A in Physics

RESEARCH EXPERIENCE

Professor Alastair Young's Group

October 2021 — June 2022

Imperial College London, London, UK

- Project: An exposition to the asymptotic equivalence of several nonparametric regression problems
- *Master Thesis* for MSci Mathematics with a Year Abroad
- The project studies the Le Cam's characterisation of equivalence between density estimation and nonparametric regression. We study the meaning of equivalence for the estimation problems.

Muller Lab

July 2021 — September 2021

Western University, Ontario, Canada

- Part of the *Fields Undergraduate Summer Research Programme (FUSRP)*
- Project: Spectrum of Almost Complete Graph
- We studied the spectra of Almost Complete Graphs (ACG), which are complete graphs with a small number of edges removed. Further applications on Echo-State Networks have also been studied.
- Journal paper under preparation.

Professor Leonid Kogan's Group

January 2021 — June 2021

Massachusetts Institute of Technology, Cambridge, MA

- Part of the *Undergraduate Research Opportunities Programme (UROP)*
- Project: Classification of Financial Time Series
- We developed some methods of simulating financial time series simulation compared algorithms of distinguishing simulated time series from real-life data.

Dr. Michele Coti-Zelati's Group

June 2020 — September 2020

Imperial College London, London, UK

- Part of the *Undergraduate Research Opportunities Programme (UROP)*
- Project: Enhanced Diffusion Equation
- We studied how the ℓ^2 energy of solutions of enhanced diffusion equations decay with time using mathematical analysis and numerical simulation in Python. A directed reading on stochastic analysis then followed.

Dr. Andrew Duncan's Group

June 2019

Imperial College London, London, UK

- Part of *Year 2 Mathematics Group Project*
- Project: A Retrospective Analysis of Governmental Interventions to Covid-19
- We developed new Bayesian models on the reproduction numbers of Covid-19 and used them to evaluate the effectiveness of various governmental interventions with R and STAN.

Dr. Andrew Duncan's Group

June 2018

Imperial College London, London, UK

- Part of first-year *Mathematics Individual Poster Project*
- Project: Simple Application of Approximate Bayesian Computation in Modelling Tumor Growth
- We investigated the application of rejection sampling and the Metropolis-Hasting algorithm in estimating the growth rate of tumours in an experiment using Matlab.
- Outstanding poster project (scored 98/100)

ACTIVITIES

Webmaster

August 2021 — Present

Imperial College Mathematics Society

- Redesigned the promotional website of the society: <https://rcsu.gitlab.io/icl-mathsoc/newsite/>
- Currently initiating a repository of student-written course materials and expository writings to facilitate discussions and revisions.

Peer Tutor

October 2020 — April 2021

Imperial College London

- Hosting weekly tutorials to facilitate first-year students' studies and provide them with overviews of more advanced topics in mathematics and statistics.
- Syllabus available on my personal website.

AWARDS

Oxford-Radcliffe Graduate Scholarship

September 2022 - September 2026

Stipend for the ongoing PhD studies.

EPRSC CDT in Mathematics of Random Systems

September 2022 - September 2026

Grant for the ongoing PhD studies.

Institute of Mathematics and its Applications (IMA) Prize

2022

Membership of the Society awarded to students with outstanding final examination results.

Dean's List

2019, 2020, 2022

Top 10% of years 1, 2 and 4.

Selected as the candidate for MIT-Imperial Exchange Programme

2020

Only one position available in cohort.

SKILLS

Scientific Computation

Python, Julia, Matlab, R, STAN, Git

Webpage Development

Javascript (with React.js and Node.js), HTML5/CSS3

Communication

English, Cantonese (Native), Chinese (Native, reading and writing)