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Chun Hei (Samuel) Lam

Statistician

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I am a final year undergraduate at Imperial College London. I was selected as a candidate for the MIT-Imperial exchange programme. My main research interests are random matrix theory and its applications to statistical learning. In my spare time, I also research on dynamical systems and stochastic analysis.

Education

MSci Mathematics with a Year Abroad **October 2018 — Present**
Imperial College London, London, UK *Year 1: 89.47/100, Year 2: 87.49/100*

- Dean's list candidate for year 1 and year 2

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

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

Research Experience

Professor Alastair Young's Group **October 2021 — Present**
Imperial College London, London, UK

- Project: Equivalence between density estimation and nonparametric regression.
- *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 — Present**
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.

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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

Selected as the candidate for **MIT-Imperial Exchange Programme**. 2020

Dean's List for year 1 and year 2. (Top 10% of the year) 2019, 2020

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)

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