

Samuel is currently a DPhil (PhD) student at the University of Oxford, as part of the CDT Mathematics of Random Systems. Prior to this, Samuel read mathematics as an undergraduate at Imperial College London, and was selected as a candidate for the MIT-Imperial exchange programme. His research interests are broadly theories of deep learning. Samuel is currently researching on the kernel-limit and mean-field analyses of neural networks applied to online learning problems.

EDUCATION

DPhil in Mathematics <i>University of Oxford, UK</i>	September 2022 — Present
- As part of the 4-year CDT in Mathematics of Random Systems, Analysis Modelling and Algorithms. - Funded by the Oxford-Radcliffe Graduate Scholarship and a grant for EPSRC CDT in Mathematics of Random Systems (Ref: 2733979). - Thesis expected to be submitted in October 2026. - Expected Thesis Title: <i>Asymptotic Analysis in Deep Learning</i>. - Supervised by Prof. Justin Sirignano	
MSci Mathematics with a Year Abroad <i>Imperial College London, London, UK; third year spent at Massachusetts Institute of Technology, Cambridge, MA</i>	October 2018 — July 2022 Overall: 88.55/100
- Master's thesis: <i>An exposition to the asymptotic equivalence of several nonparametric regression problems</i> - Master's thesis supervised by Prof. Alastair Young. - Indicative course content: analysis, PDE, stochastic analysis and statistical theory.	

PUBLICATIONS

Weak Convergence Analysis of Real-time Recurrent Learning (RTRL) for a class of Recurrent Neural Networks S.C.H. Lam* , J. Sirignano* and K. Spiliopoulos*. <i>Invited for revision and resubmission in the Journal of Machine Learning Research (JMLR) in October 2025. arxiv:2501.08040</i>	2025+
Weak Convergence Analysis of Online Neural Actor-Critic Algorithms S.C.H. Lam* , J. Sirignano* and Z. Wang*. <i>Invited Revision for Mathematics of Operations Research for revision. Revision submitted in October 2025. arxiv:2403.16825</i>	2024+
Kernel Limit of Recurrent Neural Networks Trained on Ergodic Data Sequence S.C.H. Lam* , J. Sirignano* and K. Spiliopoulos*. <i>Accepted in October 2025 for publication in the Annals of Applied Probability. arxiv:2308.14555</i>	2024+
Deep Neural Network Initialization with Sparsity Inducing Activations I. Price, N.D. Ball, S.C.H. Lam , A.C. Jones, J. Tanner. <i>Accepted in the 12th International Conference on Learning Representations (ICLR). arXiv:2402.16184.</i>	2024

AWARDS

Oxford-Radcliffe Graduate Scholarship <i>University College, Oxford. Stipend for the ongoing PhD studies.</i>	September 2022 - September 2026
EPSRC CDT in Mathematics of Random Systems <i>Mathematical Institute, University of Oxford. Grant for the ongoing PhD studies.</i>	September 2022 - September 2026
Old Members' Trust Graduate Conference and Academic Travel Fund <i>University College, Oxford. For travel to the 12th International Conference on Learning Representations (ICLR).</i>	2024
Institute of Mathematics and its Applications (IMA) Prize <i>Membership of the Society awarded to students with outstanding final examination results.</i>	2022

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.

OTHER TALKS AND PRESENTATIONS

21st Oxford-Berlin Young Researchers Meeting on Applied Stochastic Analysis

July 2025

Presentation for: *Weak Convergence Analysis of Real-time Recurrent Learning (RTRL) for a class of Recurrent Neural Networks.*

Work by **S.C.H. Lam**^{*}, J. Sirignano^{*} and K. Spiliopoulos^{*}.

Berlin-Oxford Summer School in Stochastic Analysis

September 2024

Junior Applied Mathematics Seminar (JAMS), University of Oxford

February 2024

Presentation for: *Kernel Limit of Recurrent Neural Networks Trained on Ergodic Data Sequence.*

Work by **S.C.H. Lam**^{*}, J. Sirignano^{*} and K. Spiliopoulos^{*}.

1st Conference on Parsimony and Learning (CPAL)

January 2024

Poster for: *Deep Neural Network Initialization with Sparsity Inducing Activations*

Work by I. Price^{*}, N.D. Ball, **S.C.H. Lam**, A.C. Jones, J. Tanner.

Spring Retreat of CDT Mathematics of Random Systems, A, M and A

April 2023

Presentation for: *Weak Convergence Analysis of Online Neural Actor-Critic Algorithms*

Work by **S.C.H. Lam**^{*}, J. Sirignano^{*} and Z. Wang^{*}.

AiChE Annual Meeting

November 2022

Presentation for: *Data-Driven Analysis of Learning Behavior within a Student-Led Chemical Engineering Wiki*

Work by: T.N.H. Cheng^{*}, P. Walker, L. Paoli, J. Heng, **S.C.H. Lam**, Maraj, M. and D. David.

TEACHING ACTIVITIES

Deep Learning

Hilary (Spring) 2023, 2024, 2025

for Master of Computational Finance at the University of Oxford.

As tutor (Hilary 2024, 2025) and teaching assistant (Hilary 2023).

Introduction to Partial Differential Equations

Michaelmas (Autumn) 2024

for Master of Computational Finance at the University of Oxford.

As tutor (Michaelmas 2024).

OTHER PROFESSIONAL ACTIVITIES

Reviewer for the following Journals:

SIAM Journal of Mathematics of Data Science, *AIMS Foundations of Data Science*

External Affairs Officer

March 2023 — Present

Weir (Graduate) Common Room, University College, Oxford.

Marker for Mathematics Admission Test (MAT)

October 2025

University of Oxford

Co-founder, Administrator and Advisor

December 2021 — September 2025

Imperial College MathsWiki

Webmaster

August 2021 — July 2022

Imperial College Mathematics Society

Peer Tutor

October 2020 — April 2021

Imperial College London

SKILLS

Scientific Computation

Python, Julia, Matlab, R, STAN, Git

Webpage Development

Javascript (with React.js and Node.js), HTML5/CSS3, PHP8, Strapi, Wordpress

Communication

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