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Samuel Chun-Hei Lam

MSci, AIMA, ARCS

Samuel is currently a DPhil (PhD) student at the University of Oxford, as part of the CDT Mathematics of Random Systems. Prior to this, he 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. He is currently researching on the kernel-limit and mean-field analyses of neural networks.

EDUCATION

DPhil in Mathematics	September 2022 — Present
University of Oxford, UK	
\cdot $$ As part of the 4-year CDT in Mathematics of Random Systems, Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis Modelling and Algorithm 2015) Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis Modelling and Algorithm 2015) Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis Modelling and Algorithm 2015) Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis Modelling and Algorithm 2015) Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis Modelling and Algorithm 2015) Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis Modelling and Algorithm 2015) Analysis Modelling and Algorithm 2015 (Sector 2015) Analysis (Sector	orithms.
 Thesis expected to be submitted in October 2026. 	
• Expected Thesis Title: Asymptotic Analysis in Deep Learning.	
 Supervised by Prof. Justin Sirignano 	
MSci Mathematics with a Year Abroad	October 2018 — July 2022
Imperial College London, London, UK; third year spent at Massachusetts Institute of Technology, Camb	ridge, MA Overall: 88.55/100
\cdot Master's thesis: An exposition to the asymptotic equivalence of several nonparametric regression p	roblems
 Master's thesis supervised by Prof. Alastair Young. 	
• Indicative course content: analysis, PDE, stochastic analysis and statistical theory.	
Awards	
Oxford-Radcliffe Graduate Scholarship	September 2022 - September 2026
University College, Oxford. Stipend for the ongoing PhD studies.	
EPRSC CDT in Mathematics of Random Systems	September 2022 - September 2026
Mathematical Institute, University of Oxford. Grant for the ongoing PhD studies.	
Old Members' Trust Graduate Conference and Academic Travel Fund	2024
University College, Oxford. For travel to the 12th International Conference on Learning Representation:	s (ICLR).
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.	
Journal Publications	
Weak Convergence Analysis of Online Neural Actor-Critic Algorithms	2024+
S.C.H. Lam *, J. Sirignano* and Z. Wang*.	
Submitted. arxiv:2403.16825	
Kernel Limit of Recurrent Neural Networks Trained on Ergodic Data Sequence	2024+
S.C.H. Lam *, J. Sirignano* and K. Spiliopoulos*.	
Submitted. arxiv:2308.14555	
Conference Publications	
Deep Neural Network Initialization with Sparsity Inducing Activations	2024
I. Price, N.D. Ball, S.C.H. Lam , A.C. Jones, J. Tanner.	
Accepted in the 12th International Conference on Learning Representations (ICLR). arXiv:2402.16184.	

Other Talks and Presentations

Berlin-Oxford Summer School in Stochastic Analysis Junior Applied Mathematics Seminar (JAMS), University of Oxford Presentation for: Kernel Limit of Recurrent Neural Networks Trained on Ergodic Data Sequence. Work by S.C.H. Lam *, J. Sirignano* and K. Spiliopoulos*.	September 2024 February 2024
1st Conference on Parsimony and Learning (CPAL) 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.	January 2024
Spring Retreat of CDT Mathematics of Random Systems, A, M and A Presentation for: Weak Convergence Analysis of Online Neural Actor-Critic Algorithms Work by S.C.H. Lam *, J. Sirignano* and Z. Wang*.	April 2023
AiChE Annual Meeting 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.	November 2022
Teaching Activities	
Deep Learning for Master of Computational Finance at the University of Oxford. As tutor (Hilary 2024) and teaching assistant (Hilary 2023).	Hilary 2023, 2024
Other Professional Activities	
Reviewer for the following Journals: SIAM Journal of Mathematics of Data Science	
Co-founder and Advisor Imperial College MathsWiki	December 2021 — Present
External Affairs Officer Weir (Graduate) Common Room, University College, Oxford.	March 2023 — March 2024
Webmaster Imperial College Mathematics Society	August 2021 — July 2022
Peer Tutor Imperial College London	October 2020 — April 2021
Skills	
Scientific Computation Python, Julia, Matlab, R, STAN, Git	

Scientific ComputationPython, Julia, Matlab, R, STAN, GitWebpage DevelopmentJavascript (with React.js and Node.js), HTML5/CSS3, PHP8, Strapi, WordpressCommunicationEnglish, Cantonese (Native), Chinese (Native, reading and writing)