Richie Lo Yat Long

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EDUCATION

University of Oxford

- Master of Science (Computer Science) **– (Distinction, Class of 2021)**
- Relevant coursework: Bayesian Statistical Probabilistic Programming, Quantum Processes and Computation, Law and Computer Science, Advanced Topics in Machine Learning, Computational Game Theory
- Thesis: Cheap Talk Discovery and Utilization in Multiagent Reinforcement Learning, supervised by Professor Shimon Whiteson and Professor Jakob Foerster **– (The Hoare Prize for the best thesis, 2021)**

University of Hong Kong

- Bachelor of Engineering (Computer Science) **(First Class Honours, GPA: 3.71, Class of 2020)**
- Bachelor of Business Administration (Major in Information Systems and Computer Science) **(First Class Honours, GPA: 3.57, Class of 2018)**
- Relevant coursework: Introduction to data structures and algorithms, Computer Organization, Principles of Operating systems, Software Engineering, Advanced Database Management, Design and Analysis of Algorithms, Machine Learning
- Thesis: Bidirectional Rollouts in Model-Based Reinforcement Learning, supervised by Professor Jia Pan

University of Illinois at Urbana-Champaign – GPA: 3.64

- Exchange student in the Department of Computer Science (2017 Spring)
- Relevant coursework: Artificial Intelligence, Communication Networks, Introduction to data mining, Brain, Behavior & Info processing, Applied Linear Algebra

ACADEMIC HONOURS

The Hoare Prize for the best thesis in the MSc in Computer Science (2021)

Dean's Honours List (2016-2017, 2017-2018, 2019-2020)

Certificate of Merit, FYP/PG Paper Competition, IEEE (HK) Computational Intelligence Chapter (2017-2018)

Hong Kong Innovation and Technology Scholarship Award Scheme (2018)

Philip K H Wong Foundation Scholarships for Student Enrichment (2016)

HKU Foundation Scholarships for Outstanding Students (2013)

TECHNICAL SKILLS

Programming: Python, C#, C++, C, Haskell, HTML, CSS, JavaScript, PHP, SQL, Java
Machine Learning Topics: Deep Learning, Reinforcement Learning, Natural Language Processing
Machine Learning Tools: PyTorch, Tensorflow, Keras, Sci-kit Learn
Cloud Computing: AWS, Azure

PUBLICATIONS

Lo, Yat Long, Biswa Sengupta, Jakob Foerster, Michael Noukhovitch. **Learning to Communicate using Contrastive Learning**. In Review. 2023

Lo, Yat Long, Christian Schroeder De Witt, Samuel Sokota, Jakob Foerster, Shimon Whiteson. **Cheap Talk Discovery and Utilization in Multi-Agent Reinforcement Learning**. In Proceedings of the 11th International Conference on Learning Representations. 2023

Lo, Yat Long, Biswa Sengupta. **Learning to Ground Decentralized Multi-Agent Communication with Contrastive Learning**. ICLR Workshop on Emergent Communication. 2022 (**Runner-up Best Paper**)

Lo, Yat Long, Jia Pan and Albert Y.S. Lam. **Knowing When To Look Back: Bidirectional Rollouts in Dyna-style Planning**. ICAPS Workshop on Bridging the Gap Between AI Planning and Reinforcement Learning. 2020

Ghiassian, Sina, Banafsheh Rafiee, **Yat Long Lo** and Adam White. **Improving Performance in Reinforcement Learning by Breaking Generalization in Neural Networks**. In Proceedings of the 19th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS). 2020

Lo, Yat Long and Sina Ghiassian. **Overcoming Catastrophic Interference in Online Reinforcement Learning with Dynamic Self-Organizing Maps**. NeurIPS Workshop on Biological and Artificial Reinforcement Learning. 2019

Liu, Zhiyu, Wenhao Jiang, Kit Hang Lee, **Yat Long Lo**, Yui Lun Ng, Qi Dou, Varut Vardhanabhuti and Ka Wai Kwok. **A Two-Stage Approach for Automated Prostate Lesion Detection and Classification with Mask R-CNN and Weakly Supervised Deep Neural Network**. MICCAI Workshop on Artificial Intelligence in Radiation Therapy. 2019.

Lo, Yat Long, Chung Yu Woo and Ka Lok Ng. **The Necessary Roadblock to Artificial General Intelligence: Corrigibility**. AI Matters. 2019. (**Winner of 2018 ACM SIGAI Student Essay Contest on Artificial Intelligence Technologies**)

De, Subham, Shreyans Chowdhary, Aniket Shirke, **Yat Long Lo**, Robin Kravets, and Hari Sundaram. **Finding by counting: a probabilistic packet count model for indoor localization in BLE environments**. In Proceedings of the 11th Workshop on Wireless Network Testbeds, Experimental evaluation & Characterization, pp. 67-74. ACM, 2017.

Di Girolamo, Larry, Shashank Bansal, M. Butler, Dongwei Fu, Yizhao Gao, H. Joe Lee, Yan Liu, **Yat Long Lo**, David Raila, Kandace Turner et al. **The Terra Data Fusion Project: An Update**. In AGU Fall Meeting Abstracts. 2017.

RESEARCH EXPERIENCE

Research Visitor, Reinforcement Learning and Artificial Intelligence Laboratory, Alberta Machine Intelligence Institute, University of Alberta
November 2018 – February 2020

- *Conducted research on reinforcement learning focusing on step-size (learning rate) selection methods and catastrophic interference in online reinforcement learning agent*
- *Supervised by Professor Rich Sutton*

Undergraduate Research Assistant, Group for Interventional Robotic and Imaging System, University of Hong Kong
July 2018 – September 2019

- *Conducted research on applying artificial intelligence and deep learning techniques to medical images*
- *Developed reinforcement learning agent to localize prostate lesions and lung opacities in MRI and X-ray images*
- *Supervised by Professor Ka Wai Kwok*

Machine Learning Researcher, capstone research project on depression detection with machine learning, University of Hong Kong
January 2018 – June 2018

- *Conducted research on classifying detection from social media text using various machine learning methods like support vector machines and deep neural networks*
- *Achieved an accuracy of 85%, using multichannel convolutional neural network, trained on both Chinese and English social media text data*
- *Received Certificate of Merit in IEEE (HK) Computational Intelligence Chapter FYP & PG Competition 2017-18*
- *Supervised by Professor Michael Chau*

Undergraduate Research Assistant, Business Analytics Laboratory, Faculty of Business, University of Hong Kong
Oct 2017 – June 2018

- *Provided technical work to on-going business analytics research projects in data mining, text mining and data crawling*
- *Supervised by Professor Michael Chau*

Undergraduate Research Assistant, National Center for Supercomputing Applications-Department of Atmospheric Science, University of Illinois at Urbana-Champaign
May- August 2017

- *Worked on Terra Data Fusion project, one of NASA's ACCESS projects*
- *Developed metadata generation programs for the data of the satellite TERRA, in compliant with NASA's standard*
- *Developed applications that handle and process petascale satellite data on supercomputer Blue Waters*
- *Supervised by Blue Water Professor – Professor Larry Di Girolamo, Dr. Guangyu Zhao and the HDF group*

INDUSTRY EXPERIENCE

Senior Machine Learning (Research) Engineer, Dyson Robot Learning Lab, Dyson
February 2023 – Current

- *Conduct cutting-edge research in robot learning*
- *Develop state-of-the-art machine learning systems for robotics*
- *Supervised by Dr. Stephen James*

AI Researcher - DRL, Shell Research
July 2022 – February 2023

- *Recipient of Special Recognition Award in Artificial Intelligence*
- *Provided subject-matter expertise and technical leadership across the team's AI portfolio projects*
- *Developed reinforcement learning models for energy trading related applications*
- *Sample projects: AI for battery trading, solar fuel cell control, wind farm control*

Machine Learning Scientist Intern, Chief Technology Office-Solution Incubation Team, Zebra Technologies
September 2021 – June 2022

- *Developed machine learning tools for warehouse automation (e.g., task scheduling)*
- *Conducted research on large-scale communicating agents in warehouses based on multi-agent reinforcement learning*
- *Supervised by Dr. Biswa Sengupta*

Junior Developer – Machine Learning (Micro-Internship), EcoSync Oxford
December 2020

- *Optimized the company's deep reinforcement learning codebase – 400x Speedup*
- *Integrated a prediction model into the reinforcement learning codebase as a simulator*

Research Intern, Fano Labs
June-August 2018
- *Conducted research on natural language processing*
- *Research Focus: Universal sentence representation for low resource languages (e.g. Cantonese) with deep neural networks*
- *Side focus: Developed deep learning models for Chinese character recognition in videos*
- *Supervised by Professor Albert Y.S. Lam*

Data Science intern, Inference Analytics
July-September 2017
- *Inference Analytics is a data analytics startup company based in Chicago*
- *Worked on the development of a recommendation engine with real customer data with tools including PySpark and Keras*
- *Made use of deep neural networks for next-basket recommendation*

Intern, Developer Experience Group, Microsoft Hong Kong
June-August 2016
- *Built demos making use of Microsoft's Technology, E.g. IOT weather station demo, Universal Windows Applications, Smart Mirror Application*
- *Technologies/Techniques used: C#, SQL, SQL Server, Microsoft Azure, JSON over HTTP, Server/Client Architecture*

Developer Intern, QWeUs Ltd
January-May 2016
- *QWeUs is a startup company in mobile gaming stationed at Cyberport*
- *Developed mobile game applications with C# on Unity Engine*

Internship Trainee (Mobile Application Development), PokeGuide Ltd
July-December 2015
- *Pokeguide is a mobile navigation application, Ranked No.1 in the navigation category of Apple's AppStore with 100K downloads*
- *Developed features including geolocation, navigation and shops browsing system on the android mobile application with tools like RESTful APIs and Android's fragments*
- *Created the company's website*
- *Conducted business negotiations with shops in Hong Kong and strategic planning of application launch*

ACCOMPLISHMENTS AND AWARDS

2nd runner up, AI Driving Olympics, International Conference on Robotics and Automation, IEEE
2019
- *Developed and deployed machine learning models (using reinforcement learning and imitation learning) onto robotic vehicle to participate in the Lane-following challenge of the competition*
- *Supervised by Professor Loretta Choi*

1st runner up, InnoTech Law Hackathon, Law Society of Hong Kong
2018
- *Developed a prototype to transcribe and summarize audio files using speech recognition and natural language processing technologies*

Winner, Cyberport University Partnership Programme, Cyberport, Hong Kong
2016
- *A financial technology (FinTech)-focused entrepreneurship programme*
- *Took business courses and received mentoring at Stanford Graduate School of Business*
- *Received HKD 100000 funding from Cyberport to further develop the award-winning FinTech project*
- *Developed and designed a virtual stock investment platform that aims to gamify the process to appeal to beginners*

1st runner up, National Finalist, Imagine Cup Hong Kong (Innovation), Microsoft
2016
- *Led a team of 5 people to develop a virtual reality mobile application using the Unity Engine*
- *Incorporated the concept of 'Memory Palace' into the application to improve one's learning efficiency*

VOLUNTEERING

Reviewer, ICML
2023
Reviewer, NeurIPS

2022

Programme Committee Member, AI for Agent-Based Modeling workshop, ICML

2022, 2023

Reviewer, IEEE Transactions on Intelligent Transportation Systems

September 2021

Senior Consultant, Oxford Strategy Group Digital

January-July 2021

- A machine learning consultancy project with startup companies CollectWise and BudFox
- *Develop time-series prediction models and automated trading model for cryptocurrencies trading*

Machine Learning Researcher, Rhodes Artificial Intelligence Lab (RAIL)

November 2020 - Current

- Work on improving an Informal Settlement Mapping too using machine learning in collaboration with the World Food Programme