

# 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

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

## HONOURS

**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 Multi-Agent Communication with Contrastive Learning.** In Review. 2024

**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 11<sup>th</sup> International Conference on Learning Representations (ICLR). 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 19<sup>th</sup> 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 11<sup>th</sup> 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.

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## INDUSTRY EXPERIENCE

### Senior Research Engineer, Dyson Robot Learning Lab, Dyson

February 2023 – Current

- ❖ Conduct cutting-edge research in robot learning for real-world deployment
- ❖ Lead and develop initiatives in sample-efficient imitation learning and reinforcement learning algorithms for robot manipulation
- ❖ Develop efficient and robust robot learning training infrastructure
- ❖ Supervised by Dr. Stephen James

### AI Researcher – DRL for Power Markets, 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
- ❖ Worked closely with traders to develop time-series prediction models
- ❖ 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



## 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*



## ACCOMPLISHMENTS AND AWARDS

### **2<sup>nd</sup> 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*

### **1<sup>st</sup> 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*

### **1<sup>st</sup> 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, 2024

### **Reviewer, NeurIPS**

2022, 2023

### **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 – March 2022

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