

David Yu-Tung Hui

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Education

Mila, Quebec AI Institute, Université de Montréal

MSc, CGPA 4.15/4.3: Computer Science (AI).

Sept 2020 – Feb 23

Trinity College, University of Cambridge

BA (Hons), II.1: Computer Science with Physics and Mathematics.

Oct 2015 – Jul 18

Academic Research Experience

MSc Student, Mila Quebec AI Institute, Université de Montréal

Sept 2020 – Feb 23

MSc thesis: ‘Stabilizing Q-Learning for Continuous Control’, co-advised by Pierre-Luc Bacon and Aaron Courville.

- Improved stability of reinforcement learning algorithms for (simulated) robots by finding a convergence condition for Q -learning with the Neural Tangent Kernel.
- Identified that deep networks induce heteroscedastic Gumbel noise in Q -learning.

Research Assistant, Mila Quebec AI Institute, Université de Montréal

Jan – Dec 2019

Advised by Yoshua Bengio.

- Improved sample efficiency of imitation learning and reinforcement learning algorithms used to train an agent to follow instructions in a gridworld by improving architecture design and incorporating generative adversarial imitation learning.
- Also applied deep learning to computational chemistry and medical imaging.

BA Student, Trinity College, University of Cambridge

Oct 2017 – Jul 18

BA thesis: ‘Deep Reinforcement Learning for Chess’, advised by Sean Holden.

- Augmented the C++ Stockfish chess agent to use a value function trained by Deep Reinforcement Learning.

Undergraduate Research Opportunities Programme (UROP), University of Cambridge

Summer 2016

Advised by Alan Blackwell.

- Invented algorithms to track and keep objects in focus across multiple videos.

Industrial Experience

Deep Learning Research Intern, Tractable, London, UK

Jul – Dec 2018

TensorFlow: Few-shot transfer of classifiers to Talanx RFP dataset with 3x winning margin.

Undergraduate Group Project, ARM, Cambridge, UK

Spring 2017

C++, Assembly: Map a 2x2 m² floor in < 5 minutes with a Pololu robot swarm.

Data Science Intern, Facebook London, UK

Summer 2017

Python, SQL: Measure user-ad conversion rate and matching quality, improving reliability of revenue-ad attribution.

Awards

Scholar Award

NeurIPS 2023

Free registration and travel to NeurIPS (~ \$2500 USD) for first-authoring spotlight paper.

Bourse C-Scholarship, Université de Montreal

Sept 2020 – Aug 21

Tuition fee exception (equivalent to \$22315.59 CAD) for high academic achievements.

Science Essay Prize, Trinity College, Cambridge

2017

For ‘Descartes and Spinoza in the 21st Century’, on the respective merits of symbolic AI and machine learning.

British Mathematical Olympiad

Top 100: Senior Olympiad. 2013
Top 50, invited to a Summer School: Intermediate Olympiad. 2012

National Research Project Award, First Lego League

2011

Captained a team representing the UK at the Open European Championships. Wrote the winning research presentation.

Talks and Seminars

Presentations

Double Gumbel Q -Learning NeurIPS 2023
Double Gumbel Q -Learning (**Invited Speaker**) SynAGI Seminar, IBM, Jul 18 2023
BabyAI Poster Session, Hitachi-Mila Workshop, Oct 11 2019
BabyAI Poster Session, ElementAI Montreal, Jul 4 2019

Research Seminars while studying at Mila, Quebec AI Institute

Tunable Asymmetric Q -Learning Feb 3 2023
Convergence of Deep Q -Learning Nov 22 2022
Continuous Q -Learning with LayerNorm Oct 25 2022
Maximum-Entropy RL Aug 11 2022
Solving MuJoCo by Scaling Apr 7 2022
Neurosymbolic Agents: A Proposal Nov 9 2021
Policy Evaluation Networks Oct 14 2021

Reading Group Discussion Leader/Presenter

Graph Attention Networks Mila, Sept 14 2021
Program Synthesis with Pragmatic Communication Mila, Aug 3 2021
Discovering Reinforcement Learning Algorithms Mila, Jun 8 2021
Emergent Symbols through Binding in External Memory Mila, Mar 17 2021
MDP Homomorphic Networks Mila, Nov 2 2020

Service

Workshop Organizing

AIPLANS (Advances in Programming Languages and Neurosymbolic Systems) Virtual, NeurIPS 2021
• Co-wrote workshop proposal, determining scope and content of submissions and speakers; organized and oversaw reviewing logistics; created graphic design and online content; moderated online discussion.
Neural Scaling Laws Mila, Oct 2021
• Set schedule for a three-day workshop and moderated online discussion.

Refereeing

Datasets and Benchmarks Track NeurIPS 2021
Theory and Foundation of Continual Learning Workshop ICML 2021
Workshop on Ecological Theory of Reinforcement Learning NeurIPS 2021

Reading Group Organizing

ML4Code Reading Group Mila, 2021
Presented papers, sent reminders to scheduled speakers and Mila mailing list.

Teaching Assistant

Interaction Design: Undergraduate course lectured by Hatice Gunes. University of Cambridge, Mar – Jun 2017

Skills

English, Cantonese: Bilingual speaker **Python, JAX, NumPy, SLURM:** Daily usage
French: Conversational **PyTorch, TensorFlow, C++, Java**