Steven Tin Sui Luo – Curriculum Vitae

Contact Information

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Research Interests

Areas: Machine learning, brain & cognitively inspired learning, test-time learning, machine memory, machine lifelong learning, neural fields, computer vision

My key research question is how can we enable machines to autonomously adapt in the wild without human intervention? Humans could derive their own goals, acquire their own data, and seamlessly switch between different timescales of learning and memory formation. I'm particularly interested in developing a unified connectionist architecture that could internalize these components of intelligence to enable continuous adaptation.

Education

University of Toronto (St. George), Canada
Department of Computer Science 2021/09 – Present
Computer Science Specialist & Math Major

St Paul's Co-educational College, Hong Kong
International Baccalaureate (IB): 45/45 2015/09 – 2021/06

Professional Experience

Vivid Machines, Toronto, ON, Canada
Deep Learning Associate, Supervisor: Pegah Kamousi 2024/05 – 2024/12
Improved robustness and generalization of tree detection model
Iterated 3 YOLO models to production and reduced tree detection error from 50% to 15%

EN:ai, Hong Kong, China
Machine Learning Intern, Supervisor: Ngai Wong 2021/05 – 2021/08
Developed hand detection and hand-keypoint detection model using single-shot detector and mobileNetV2
Achieved real-time inferencing (20+ fps) on cpu

Research Experience

Agentic Learning AI Lab, NYU
Visiting Student Researcher, Supervisor: Mengye Ren 2025/05 – Present
Investigating the use of gisting and linear RNNs to enable in-context concept learning and infinite-shot in-context learning in language models.

Toronto Computational Imaging Group, UofT
Undergraduate Researcher, Supervisor: David Lindell 2024/01 – 2024/05
Developed a theory of domain manipulation that explained the effectiveness of grid-based neural fields.
Technical report received A+ for CSC494 Thesis Course.

NGai Lab, HKU
Visiting Student Researcher, Supervisor: Ngai Wong 2023/05 – 2024/04
Developed an architecture for neural fields that decouples inference cost with network depth.
Realized the nonparametric teaching theory on neural fields to speed up training time by up to 1.5×.
Two papers accepted at **ICLR24** and **ICML24**, respectively.

Cognitive Neuroscience and Sensorimotor Integration Lab, UofT Scarborough
Undergraduate Researcher, Supervisor: Matthias Niemeier 2021/09 – 2022/12
Developed a novel loss function and an architecture to unify grasping and detection CNNs under identical training regime, enabling pairwise comparison with the EEG signals from human brains
Preliminary poster accepted to **MAIN 2022**
Final manuscript to be submitted to **Nature Neuroscience**.

Peer-Reviewed Conference Publications

(*=equal contribution)

Zhang, Chen, **Steven Tin Sui Luo***, Jason Chun Lok Li, Yik-Chung Wu, and Ngai Wong. "Non-parametric teaching of implicit neural representations." *In Proceedings of the 41st International Conference on Machine Learning*, 2024.

Li, Jason Chun Lok, **Steven Tin Sui Luo***, Le Xu, and Ngai Wong. "ASMR: Activation-Sharing Multi-Resolution Coordinate Networks for Efficient Inference." *In The Twelfth International Conference on Learning Representations*, 2024

Preprints & Reports

Reza, Tahsin, Ewan Jordan, **Steven Tin Sui Luo**, Kirtan Patel, Jessica Tang, Matthias Niemeier. "From Tasks to Topology: Dorsal and Ventral Streams Emerge in Optimized Neural Networks." *bioRxiv 2025.11.16.688720, 2025*

Steven Tin Sui Luo. "A New Perspective To Understanding Multi-resolution Hash Encoding For Neural Fields." *arXiv preprint arXiv:2405.10531*, 2025

Tahsin, Reza, **Steven Tin Sui Luo***, Rohan Jain, Jack Cai, and Matthias Niemeier. "Task-Agnostic Approach to Modeling the Ventral and Dorsal Stream." *In The 6th Edition Of The Montreal AI And Neuroscience Conference*, 2022

Honors and Awards

Faulds Janet Elizabeth Admissions Award ($2000)	2021
St. Michael's College Travel Grant ($750)	2024
Department of Computer Science Academic Travel Grant ($600)	2024
ASSU Travel Grant ($300)	2024
2-time Dean's List Scholar	2021-2025

Service

Founder/Organizer: EigenAI Student Conference — 2023
Since its inception in Sep-2023, it has grown into an annual 2-day event with 500+ participants.

VP of Engineering: University of Toronto Machine Intelligence Student Team — 2022
70 people, 11 projects, and 2 industry collaborations.

Invited Talks

The Road To Passion and How To Explore It. EigenAI Student Conference, Toronto, CA — 2023

A Guide to Technology for High School Students. Technology World Student Conference, Hong Kong — 2023

References

Dr. Mengye Ren, Assistant Professor of Computer Science and Data Science,
New York University, +1 (212) 992-7547, `mengye@cs.nyu.edu`

Dr. Ngai Wong, Associate Professor of Electrical and Electronic Engineering,
The University of Hong Kong, +852 3917-1914, `nwong@eee.hku.hk`

Dr. David Lindell, Assistant Professor of Computer Science,
University of Toronto, +1 (507) 514-2491, `lindell@cs.toronto.edu`