Steven Tin Sui Luo

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EDUCATION AND SKILLS

University of Toronto (St. George) - *Computer Science Specialist & Math Major* Sep 2021 - May 2025

- Relevant courses: "Parallel Programming", "Probabilistic Learning and Reasoning", "Into to ML", "Numerical Methods"
- Languages: Python, Java, R, C/C++, CUDA, Bash
- Frameworks: Pytorch, Keras, Tensorflow
- ML Expertise: Computer vision, audio ML, explainable AI, neural fields, computer graphics

LEADERSHIP

VP of Engineering - *UofT Machine Intelligence Student Team* Aug 2022 – Sep 2023

- Managed a department with more than **70 people**, including 14 project directors and 11 projects ranging from applied, academic, and finance ML topics.
- Designed the project **scopes**, **methodologies**, and **agile timelines** for our company collaboration projects (2), as a project manager.
- Co-lead 3 initiatives for the Engineering department: (1) company project collaboration (e.g. providing ML solution to AltaML and Aercoustics) (2) front-end development team (3) EigenAI Conference (300 attendance)

PUBLICATIONS

Nonparametric Teaching of Implicit Neural Representations **2nd author**

- Submitted to ICML 2024

ASMR: Activation-sharing Multi-resolution Coordinate Networks For Efficient Inference **Co-author**

- Accepted at ICLR 2024

Task-Agnostic Approach to Modeling the Ventral and Dorsal Stream **Co-author**

- Accepted to MAIN 2022

EXPERIENCES

Undergraduate Researcher - *Toronto Computational Imaging Group (David LINDELL)* Sep 2023 – Present

- Leading a project on deriving the expressivity of grid-based neural fields such as NGLOD, Instant-NGP, and DINER. Interested modalities include audio, image, video, **SDF**, **radiance fields**, etc.

ML Research Intern - *University of Hong Kong (Ngai WONG)* May 2023 – Present

- Co-authored the paper, "ASMR: Activation-sharing Multi-resolution Coordinate Networks For Efficient Inference", which is accepted at ICLR 2024.
- Designed robust experiment pipelines for image, video, SDF, and ablation tasks, and derived the current version of the methodology.
- Constructed the **mathematical proof** for our $O(1)$ inference cost.
- Implemented a **PyTorch** version of "Implicit Neural Representation with Level-of-Experts" from scratch

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Research Assistant - *UTSC CoNSens* Sept 2021 – Dec 2022

- Created **novel double log loss** and CNN architecture with Alexnet backbone that is capable of both classification and grasping tasks without changing any layer or hparam except the training labels. Achieved **∼80 accuracies** on both downstream tasks.
- Designed the visualization and analysis pipeline for the kernels of Alexnet on grasping and classification tasks using XAI methods such as **Guided Backpropagation**, **Neuron Shapley**, and **Representational Similarity Analysis**.
- Led development and **open-sourced** NeuroVis API for neuroscience-focused CNN kernel visualization specialized for orientation and 3D shapes.

Summer ML Intern - *EN:ai, HK* May 2021 – Aug 2021

- Created hand detection and hand-keypoint detection model using **single-shot detector (SSD)** and **mobileNetV2** architecture with **TF2**, achieving **real-time inferencing (20+ fps)** on cpu and ready for post-training quantization.

OTHER PROJECTS

- **Wind Turbine Audibility Classification** (Dec 2023)
- **Novel Eye-to-face Synthesis with Standard Deviation Loss** (Aug 2021)
- **Novel Font Style Transfer Across Multiple Languages with Double KL-Divergence Loss** (Aug 2020)
- **Cantonese Lip Reading** (Aug 2019)