Allison Tsz Kwan Lau

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Education

University of Toronto Sep 2025 – Jan 2027 (Exp.)
M.S. in Computer Science *Toronto, Canada*

University of Toronto Sep 2021 – Jun 2025 (Exp.)
B.S. in Computer Science, Physics, Mathematics (*Minor*) *Toronto, Canada*

Coursework: Probabilistic Learning and Reasoning, Numerical Methods, Algorithm Design and Analysis, Neural Networks and Deep Learning, Probability with Computer Applications, Operating Systems

Publications

1. **A. Lau**, Y. Choi*, V. Balazadeh*, K. Chidambaram*, V. Syrgkanis, R. Krishnan. "Personalized Adaptation via In-Context Preference Learning". NeurIPS Workshop on Adaptive Foundation Models, 2024.

2. W. Guo, **A. Lau**, J. C. Davies, V. Forte, E. Grinspun, L. A. Kahrs. "Analyzing the effect of undermining on suture forces during simulated skin flap surgeries with a three-dimensional finite element method". EG VCBM, 2024.

3. A. Khandelwal, S. Jeram, R. Dungee, A. Lau, **A. Lau**, E. Sun, P. Van-Lane, S. Chen, A. Tohuvavohu, T. Li. "Beyond CCDs: Characterization of sCMOS detectors for optical astronomy". SPIE Astronomical Telescopes + Instrumentation, 2024.

Research Experience

Research Intern, University of Toronto May 2023 – Aug 2025

Vector Institute for Artificial Intelligence May 2024 –
Supervisor: Rahul Krishnan
- Research in in-context learning for causal effect estimation with unobserved confounding [1]
- Implemented meta in-context learning algorithm for Large Language Model (LLM) post-training
- Conducted literature review on Reinforcement Learning from Human Feedback (RLHF), preference optimizations algorithms and memory mechanisms

Secure Intelligent and Trustworthy Systems Lab May 2025 – Aug 2025
Supervisor: Gururaj Saileshwar
- Research in side-channel attacks on Mixture of Experts (MoE) LLMs (Mixtral 8x7B) – Work in Progress

Toronto Computational Imaging Group Sep 2024 – Dec 2024
Supervisor: David Lindell
- Research in applications of polarization data retrieved from a coherent LiDAR prototype system
- Processed and analyzed polarization data, identifying key features and evaluating their potential applications for future research and system improvements.

Medical Computer Vision and Robotics Lab Jan 2024 – May 2024
Supervisor: Lueder Kahrs
- Research in rhomboid surgical skin flap closure dynamics via physics-based animation for determining optimal undermining area [2]
- Developed skin simulation models based on finite element method (FEM) and explored various hyper-elastic models

Dunlap Institute May 2023 – Aug 2023

Supervisor: Ting Li

* Designed and organized experimental setups for testing CMOS detectors, including calibration procedures and ensuring optimal conditions
* Conducted comprehensive data analysis of critical detector characteristics such as linearity, dark current and salt and pepper noise for space imaging [3]

Research Intern, Stanford University Jan 2024 – Jan 2025

Supervisor: Michael Snyder

- Extended with 5 additional wearable devices and improved code efficiency for python package `Wearipedia`, specialized in data science, for extracting data in wearables, streamlined data extraction processes, generated synthetic data to support clinical research [code]
- Developed Wearipedia usage tutorial notebooks [code]
- Managed communication with potential collaborator brands and data banks on data access and integration

Aerodynamics Lead, Blue Sky Solar Racing May 2023 – May 2025

Faculty consultant: Amy Bilton

- Oversaw the R&D division and the technical division of the team, designed training material and led training for new members
- Led R&D projects on optimal extrusion fillet radius, crosswind boundary conditions validation, rolling and static wheels simulations and mesh sensitivity test
- Communicated with faculty consultants, safety board members, and external testing facilities on team status, regulations compliance, and ongoing research
- Designed and analyzed aerodynamic performances of original and enemy aerobodies with specification in canopy and flange designs with 3D modelling and CFD simulation with textbook verifications

Awards

Dean's List	2021–2024
DCS Academic Travel Grant	2024
NSERC Undergraduate Student Research Award	2024–2025
Class of 3T0 and Associates Scholarship in Mathematics and Physics	2023–2024
The Chancellor's Scholarship	2022–2023
University of Toronto Scholar	2021–2022

Skills

Programming: Python [PyTorch, scikit-learn, JAX, NumPy, SciPy, Pandas], C/C++, CUDA, MATLAB, R, HTML/CSS/JavaScript/TypeScript [React] [projects], LaTeX

Tools: Git/GitHub, Shell Scripting, VS Code, Slurm

Modelling & Graphics: Blender, 3ds CATIA, 3D Printing, Pointwise, ANSYS Fluent

Languages: English, Cantonese, Mandarin, French (basic), Japanese (basic)

Community

Vice President, UofT Hong Kong Public Affairs & Social Services Society Sep 2022 – Apr 2023

- Led meetings and collaboration with community partners in club events

Vice President, UofT Cantonese Debate Society Sep 2022 – Apr 2023

- Led meetings, team training and team building activities for a team of 10+ members