ALLISON (TSZ KWAN) LAU

Hong Kong || Canadian citizen https://allison-lau.vercel.app/
github.com/a-llison-lau allison.lau@mail.utoronto.ca

EDUCATION

ETH Zurich Sep 25' – Aug 27' (Exp.)
MSc. in Computer Science *Zurich, Switzerland*
Focus on Visual and Interactive Computing

University of Toronto Sep 21' – Jun 25'
BSc. in Computer Science (*Specialist*), Physics (*Major*), Mathematics (*Minor*) *Toronto, Canada*
cGPA: 3.86/4.00

Relevant coursework: Probabilistic Learning and Reasoning, Numerical Methods, Algorithm Design and Analysis, Neural Networks and Deep Learning, 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 23' – Aug 25'

Vector Institute for Artificial Intelligence May 24' –
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
- Technical domains: Reinforcement Learning from Human Feedback (RLHF), preference optimizations algorithms (PPO, DPO), preference based learning, memory mechanisms, finetuning LLMs on compute clusters

Secure Intelligent and Trustworthy Systems Lab May 25' – Aug 25'
Supervisor: Gururaj Saileshwar
- Research in side-channel attacks on Mixture of Experts (MoE) LLMs (Mixtral 8x7B) – Work in Progress

Toronto Computational Imaging Group Sep 24' – Dec 24'
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
- Technical domains: LiDAR systems, polarization imaging

Medical Computer Vision and Robotics Lab Jan 24' – May 24'
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
- Technical domains: Finite element method, programming in Blender, MATLAB, c++ graphics libraries

Dunlap Institute May 23' – Aug 23'
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]
- Technical domains: Data analysis, experimental setup

Research Intern, Stanford University Jan 24' – Jan 25'
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]
- Forged partnership with potential collaborator brands and data banks on data access and integration

Senior Aerodynamics R&D Engineer, UofT Blue Sky Solar Racing May 23' – May 25'

Faculty consultant: Amy Bilton

- Oversaw the R&D division and the technical division of the team, designed training material and mentored junior members
- Led R&D projects on optimal extrusion fillet radius, crosswind boundary conditions validation, rolling and static wheels simulations and mesh sensitivity test
- Evaluated aerodynamic performances of original and enemy aerobodies with specification in canopy and flange designs with 3D modelling and CFD simulation with textbook verifications, informed subsequent design iterations

AWARDS

[ETH] Excellence Scholarship (ESOP)	2025
[UofT] Vector Scholarship in Artificial Intelligence (declined)	2025
[UofT] Dean's List	2021–2024
[UofT] DCS Academic Travel Grant	2024
[UofT] NSERC Undergraduate Student Research Award	2024, 2025
[UofT] Class of 3T0 and Associates Scholarship in Mathematics and Physics	2023
[UofT] The Chancellor's Scholarship, Trinity College	2022
[UofT] University of Toronto Scholar	2021

SKILLS

Programming: Python [PyTorch, scikit-learn, 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 22' – Apr 23'

- Led meetings and collaboration with community partners in club events

Vice President, UofT Cantonese Debate Society Sep 22' – Apr 23'

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