ALLISON (TSZ KWAN) LAU

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EDUCATION

ETH Zurich — Sep 25' – Aug 27' (Exp.)
MSc. in Computer Science — *Zurich, Switzerland*
Awarded Excellence Scholarship (ESOP)

University of Toronto — Sep 21' – Jun 25'
BSc. in Computer Science (*Specialist*), Physics (*Major*), Mathematics (*Minor*) — *Toronto, Canada*
Awarded NSERC Undergraduate Student Research Award 24'-25'

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. Johansen, K. Hur, J. Hung, R. Castellon, T. Peng, S. Ren, R. White, C. Park, **A. Lau**, S. Shah, H. J. Choi, W. Wang, P. Sripitak, M. Elhusinni, M. Snyder. "The Wearipedia Project: a free and open-source resource for understanding and using wearables in decentralized clinical trials". medRxiv, 2025.
4. 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.

EXPERIENCE

Vocadian / Research Engineer // Boston (remote) — Jun 25' –
Harvard–MIT-founded startup developing voice and biosignal AI for fatigue prediction and workplace safety

- Built an end-to-end prototype of a voice-activated data extraction and reporting system for the trucking industry, integrating speech recognition and NLP to streamline driver reporting workflows.
- Collaborated on product design and prototyping, evaluating real-world use cases and mapping potential failure modes to improve robustness and user adoption.

Oakcean Capital / Quantitative Analyst // London (remote) — Aug' – Sep' 25

- Developed and tested systematic trading signals on U.S. equities and interest rate products, contributing to alpha research efforts
- Designed and maintained research infrastructure by ingesting and cleaning 5+ years of equity trading data (1M+ observations), enabling scalable intraday model development and backtesting
- Enhanced computational efficiency of in-house pricing and risk models by implementing optimized routines in C++ and Python

University of Toronto / Research Intern // Toronto — May 23' – Aug 25'
Research in machine learning, trustworthy AI, computational imaging, medical computer vision, and astrophysical instrumentation; published as first and co-author at international conferences

Vector Institute for Artificial Intelligence | *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 areas: RLHF methodologies – PPO and DPO algorithms, preference-based learning frameworks, memory-augmented neural architectures, and distributed LLM training on GPU clusters

Secure Intelligent and Trustworthy Systems Lab | *Supervisor: Gururaj Saileshwar*

* Research in prompt-injection attacks on tool-augmented LLMs, in particular the extension of CaMeL with a secondary planner to improve agent capability in solving tasks embedded in untrusted data, evaluated the security and utility of the enhanced implementation

Toronto Computational Imaging Group | *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 areas: Coherent LiDAR systems, optical signal processing, photogrammetry

Medical Computer Vision and Robotics Lab | *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 with finite element method, explored various hyper-elastic models
* Technical areas: Finite element method, programming in Blender, MATLAB, C++[Eigen]

Dunlap Institute | *Supervisor: Ting Li*

* Research in statistical sCMOS detector characteristics such as linearity, dark current and salt and pepper noise for space imaging [4]
* Designed and organized experimental setups for testing CMOS detectors, including calibration procedures and ensuring optimal conditions
* Technical areas: Data analysis, experimental setup, developing image processing pipelines

Stanford University / Research Intern // Palo Alto (remote) | *Supervisor: Michael Snyder* Jan 24' – Jan 25'

- 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 [3]
- Developed Wearipedia usage tutorial notebooks [code]; Forged partnership with potential collaborator brands and data banks on data access and integration

PROFESSIONAL DEVELOPMENT

RippleX Fellowship Aug 25' –

12-week fellowship focused on startup building and venture capital fundamentals

- Gained practical knowledge in VC deal structures, term sheets, cap tables, due diligence, investment memo writing, market analysis, product-market fit, and startup evaluation frameworks

Certifications

- Bloomberg Finance Fundamentals

ENGINEERING PROJECTS

UofT Blue Sky Solar Racing / Junior → Senior Aerodynamics Engineer // Toronto May 23' – May 25'

- Directed R&D studies on extrusion fillet radii, crosswind boundary validation, rolling/static wheel aerodynamics, and mesh sensitivity, improving simulation accuracy and reliability.
- Assessed aerodynamic performance of team and competitor vehicle bodies through 3D modeling and CFD simulations, validating canopy and flange designs against theory to guide 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, CSS/TypeScript [React] [projects], LaTeX

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

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

Languages: English (Fluent), Cantonese (Native), Mandarin (Fluent), German (A1)

COMMUNITY

UofT Hong Kong Public Affairs & Social Services Society / Vice President // Toronto Sep 22' – Apr 23'

- Directed meetings and collaboration with community partners in club events

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

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