

# Stephen Yang

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## Education

- MASc, University of Toronto**, Mechanical Engineering Sept 2024 – Present
- **Thesis:** *A novel miniature magnetic transmission*
  - **Courses:** CSC2529 Computational Imaging, ECE1647 Introduction to Nonlinear Control Systems
- BASc, University of Toronto**, Computer Engineering Sept 2019 – Jul 2024
- Minor in Robotics and Mechatronics
  - **Thesis:** *Relaxed priority scheduling for parallel k-core decomposition* [↗](#)
  - **Capstone:** *Actuator modelling for simulation of energy-efficient human-robot walking* [↗](#)
  - **Courses:** ECE552 Computer Architecture, ECE344 Operating Systems, ECE470 Robot Modelling and Control, ECE411 Real Time Computer Control, MIE243 Mechanical Engineering Design
  - **CGPA:** 3.74
- Dual Enrollment/Access Studies, University of British Columbia** Sept 2019 – Jul 2024
- **Courses:** MATH200 Calculus 3

## Publications

- [1] Mahdi S. Hosseini et al. “Computational pathology: A survey review and the way forward”. In: *Journal of Pathology Informatics* 15 (2024), p. 100357. ISSN: 2153-3539. DOI: <https://doi.org/10.1016/j.jpi.2023.100357> [↗](#). URL: <https://www.sciencedirect.com/science/article/pii/S2153353923001712>.
- [2] Ryan Zhang et al. “Histokt: Cross Knowledge Transfer in Computational Pathology”. In: *ICASSP 2022 - 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2022, pp. 1276–1280. doi: [10.1109/ICASSP43922.2022.9747400](https://doi.org/10.1109/ICASSP43922.2022.9747400) [↗](#).

## Experience

### Research Experience

- Diller Microrobotics Lab**, Graduate Research Student Toronto, ON  
Sept 2024 – Present
- Graduate student researcher focusing on miniaturizable magnetic transmissions for robotic minimally invasive surgery.
- University of Toronto Multimedia Lab**, Undergraduate Researcher Toronto, ON  
May 2021 – Sept 2021
- Researched two separate projects in computational pathology (Data Collection Campaign project and HistoKT project).
  - Data Collection Campaign: Continued development on a proprietary web-based annotation tool for Computational Pathology (CPath). Streamlined the dataset labelling process in computational pathology. Migrated existing LAMP stack to run in Docker. Developed a Python Flask backend to process large medical data (Whole Slide Images) asynchronously. Implemented a task queue using Celery and RabbitMQ to expedite image processing (background cropping, model predictions and patch triaging) on data.
  - HistoKT: First author on a paper accepted to ICASSP 2022 on data-centric approaches to Transfer Learning in computational pathology.

### Industry Experience

- Intel Programmable Solutions Group**, Hardware Engineering Intern Toronto, ON  
April 2022 – Sept 2023
- Hardware engineering PEY intern on the Memory Subsystems/High Bandwidth Memory team, within the IP Solutions Engineering team mainly focused on developing IP for Intel Agilex and Stratix series

FPGA's.

- Designed RTL code in System Verilog for Memory Subsystems IP's and the Intel High Bandwidth Memory (HBM) IP. Debugged IP functional and timing issues using Modelsim and VCS. Wrote scripts in tcl and perl to enable Intel IP's in Quartus.
- Improved automated testing and expanded testing scope for Intel High Bandwidth Memory (HBM) IP on Intel Agilex 7 devices. Enabled hardware board testing for Intel Oak Springs Canyon IPU (Infrastructure Processing Unit) and Intel Agilex 7 FPGA's.

## Extracurricular Experience

### aUToronto, Behaviour Planner Team Member

Toronto, ON  
Oct 2022 – Sept 2023

- Planning team member for aUToronto, UofT's self-driving car team. Developed a behaviour planner algorithm which processes sensor data (object detection, traffic light sensing) as well as mapping data and selectively calls the other sub planners, namely Global Planner (trip planning) and Local Planner (local route planning).
- Developed C++ code for the ROS2 planning stack. Wrote unit tests using GTest.

### University of Toronto Hyperloop Team, Levitation and Propulsion Lead

Toronto, ON  
Oct 2019 – Dec 2022

- Lead a team of 13 engineers in the Research and Development (R&D) team, with a focus on electromagnetic drive design. Helped grow the R&D team from 5 members in 2019 to over 25 in 2020 by interviewing and recruiting potential applicants.
- Worked on developing an advanced contactless propulsion and levitation system for implementation in future hyperloop pods. Designed code in MATLAB and VBS for parameterization and parallel processing of simulations.
- Performed FEA simulations using ANSYS Maxwell, Simcenter MagNet and FEMM for electromagnetic levitation/propulsion devices including Halbach Arrays (static and dynamic), Electrodynamical wheels, DLIM (Double-Sided LIM) and TFLIM (Transverse Flux LIM).

### Engineers without Borders, Project Team Lead

Toronto, ON  
Sept 2020 – January 2021

- Lead a team of 7 University of Toronto students within the Cyber Ethics and Digital Rights (CEDR) chapter working on a Transparency and Accountability Web Design (TA/WD) project.
- Developed website in HTML and Javascript. Conducted online research on internet data usage, advertising reach, corporate marketing and digital rights. Produced informative content to be published on project website.

## Awards

<b>NSERC CREATE in Healthcare Robotics (HeRo)</b> (\$6600)	2024
<b>NSERC Undergraduate Student Research Award</b> (\$6000)	2021
<b>Google Cloud COVID-19 Hackathon Fund</b> at Medhacks 2020 for our Vision Checker application.	2020
<b>Realtor.ca Prize</b> at NWHacks 2019 for our HouseSearch algorithm.	2019
<b>205th Place</b> out of 4852 students (Top 5%) in 2019 Avogadro National Chemistry Exam	2019

## Certifications

<b>Certified SOLIDWORKS Associate in Mechanical Design.</b> Awarded by Dassault Systèmes.	2021
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## Skills & Technologies

**Coding:** SystemVerilog, Verilog, tcl, Perl, MATLAB, C++, C, Python (Flask, Celery/RabbitMQ, numpy, pandas, torch), ROS2, Kotlin, VBS,  $\text{\LaTeX}$   
**Design:** Quartus, VCS, Modelsim, Solidworks, ANSYS Maxwell, FEMM  
**Web Development:** NextJS, React, HTML, CSS, JavaScript, LAMP

# References

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Available on Request