# Aaron Hao Tan

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Education

## **University of Toronto**

Doctor of Philosophy, Robotics Institute

Thesis Enhancing Robot Task Completion Through Environment and Task Inference, CGPA (4.0/4.0)

## Experience \_

### Deep Learning and Robotics Researcher, Ph.D. Thesis

Autonomous System and Biomechatronics Lab, University of Toronto

- · Vision Language Models Robot reasoning/planning for cross embodiment navigation with hand-drawn maps.
- Diffusion Models Multi-robot map prediction via contrastive learning and consistency models in 3D environments.
- Decision Transformers End-to-end, goal oriented multi-robot navigation in unknown, unstructured environments.
- Deep Multi-agent Reinforcement Learning Centralized training for decentralized execution to address multi-robot task inference.
- Sim 2 Real Transferred robot navigation policy from simulation to the real world using domain randomization.
- Publications Published in ICRA/IROS (oral presentation), RAL, JIRS, ASME conferences.

#### **Technical Founder**

Syncere AI, Scholarply, ONE800

- Syncere AI, AR for Robotics An AR platform for remote control of humanoid robots in service settings.
- Scholarply, an LLM-powered Financial Agent Building LLM agents to automate the scholarship application process for students.
- ONE800, ChatGPT for Seniors Integrated generative AI technologies to iMessage to improve AI accessibility for senior population.
- Leadership Managed cross-functional teams from engineering to marketing and business operations.
- YCombinator Second round of interview with Garry Tan, CEO of YC, and received great feedback (top 3 percent).

#### **AI Researcher**

Temetry Faculty of Medicine, Toronto

- LLMs Built LLM-powered patient screening tool and deploying through SMS to increase healthcare accessibility.
- Ophthalmology First application of deep learning to the classification of homonymous defects on automated perimetry.
- Mask Detection Deployed novel DL models for social assistive robots to enforce COVID-19 safety protocols.
- EdTech Quantitative analysis on the impacts of remote education for surgeons globally.
- Accessibility Deploying automated SMS-based service for patient screening and history taking in remote regions.
- Publications Published in British Journal of Ophthalmology.

#### **Robotics Researcher, MASc Thesis**

General Robotics & Autonomous Systems and Processes Lab, Ontario Tech University

- Mobile Robot Stack Designed and developed both hardware and software for a novel multi-terrain robot.
- Mechatronics Designed and implemented hardware architecture for robot sensing, data acquisition, and motion control.
- Computer Vision Position and image based visual servoing of mobile manipulators for autonomous robot inspection.
- Publications Published 4 papers for IEEE and ASME conferences and journals.

#### Engineering Specialist/Advanced Technology Specialist Intern

General Motors of Canada Company - Active Safety Advanced Development

Wearable Technology Designed wearable hardware and developed ML models to predict driver behavior based on vital signs.

Camera System Designed an adjustable camera system for trailers to provide drivers with greater awareness.

# Recognition

2022-2024 Ontario Graduate Scholarship (\$15k Prize), University of Toronto

- 2023 Annual Shot on iPhone Photography Award (3rd Place), IPPAWARDS
- 2022 Apple AI/ML Scholar Nominee (1 of 3 selected across university), University of Toronto
- 2022 Undergraduate Teaching Assisstant Award (\$500 Prize), University of Toronto
- 2022 DiDi Graduate Scholarship (\$10k Prize), University of Toronto
- 2021 1st Place at RO-MAN: The Roboethics Competition (\$1k Prize), McGill University
- 2021 Best Research Day Paper in Dept. of Ophthalmology and Vision Sciences, University of Toronto
- 2019 Outstanding Thesis Award & Dean's Graduate Scholarship (\$5k Prize), Ontario Tech University
- 2018 Photograhy for Apple's Shot on iPhone Campaign, Apple

Toronto, Ontario

Toronto, Canada

September. 2019 - Present

Sept. 2019 - Present

Toronto, Ontario

Jan. 2023 - Present

Toronto, Ontario

May. 2022 - Aug. 2022

Oshawa, Ontario

May. 2017 - May. 2019

Toronto, Ontario

Toronto, Ontario

Toronto, Ontario

Toronto, Ontario

Montreal, Quebec

Toronto, Ontario

Oshawa, Ontario

NYC. New York

California, USA JULY · 2024

Oshawa, Ontario

2 Terms (2016/2017)

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