

Matthew Choi

matt.choi531@gmail.com
https://matthew9655.github.io

EDUCATION	University of Toronto , Toronto, Canada MSc in Computer Science Supervisor: Alán Aspuru-Guzik Thesis: Learning Quantum Circuits with Finetuned Pretrained Large Language Models.	Sep 2022 - Aug 2024
	University of Toronto , Toronto, Canada BA in Computer Science	Sep 2017 - Apr 2022
PUBLICATIONS	Naixu Guo, Zhan Yu, Matthew Choi , Aman Agrawal, Kouhei Nakaji, Alán Aspuru-Guzik, Patrick Rebentrost. (2024). <i>Quantum linear algebra is all you need for Transformer architectures</i>	
	Ruiyu Wang, & Matthew Choi . (2023). <i>Large Language Models on Lexical Semantic Change Detection: An Evaluation</i> .	
	Zi-Jian Zhang, Kouhei Nakaji, Matthew Choi , & Alán Aspuru-Guzik. (2023). <i>A composite measurement scheme for efficient quantum observable estimation</i> .	
	Matthew Choi , Daniel Flam-Shepherd, Thi Ha Kyaw, & Alán Aspuru-Guzik. (2022). <i>Learning quantum dynamics with latent neural ordinary differential equations</i> . Phys. Rev. A, 105, 042403.	
EXPERIENCE	Machine Learning Engineer Aug 2024 - Present	Zapata AI, Toronto
	<ul style="list-style-type: none">Tensorizing Generative Models	
	Machine Learning Engineer Intern May 2023 - Dec 2023	Zapata AI, Toronto
	<ul style="list-style-type: none">Created first-generation LLM Web Demos with Augmented Retrieval.Developed training scripts for finetuning LLMs with LoRA and qLoRA.Created core ML repo CLI for installation and testing.	
	Teaching Assistant Sep 2022 - Apr 2024	University of Toronto
	<ul style="list-style-type: none">CSC367: Parallel ProgrammingCSC309: Web Programming	
	Undergraduate Researcher May 2020 - Apr 2022	University of Toronto
	<ul style="list-style-type: none">Learning Quantum Dynamics with Neural ODEs Advisor: Alán Aspuru-GuzikImplicitly Guiding CS1 students with Analogous Problems Advisor: Michelle Craig, Jennifer Campbell	
	Software Developer May 2020 - May 2021	Modiface, Toronto
<ul style="list-style-type: none">Created web apps and ads for beauty product companies.Contributed to a financial management web application with a small group of developers using AngularJS, Stylus, CSS, and HTML		

Company Quartermaster Singapore Armed Forces, Singapore
Feb 2015 - Dec 2016

- Maintained and helped contribute to the creation of our fraternity website
- Conducted committee meetings with other members of the fraternity

PROJECTS

Sport Bot 2023

- Created a site scraper bot using Selenium to collect data on available court bookings and post it on Slack every morning using cron.
- Created a booking bot to book a specific court.

Capstone Project: Autonomous Vehicles 2022

- Created an algorithm to improve vehicle tracklet mismatches with graph techniques and cost heuristics using Python and Pytorch.

Disentangling Sentences 2021

- Investigated whether one could disentangle sentences with Beta Variational Autoencoders using Python and Pytorch.

TALKS AND POSTERS

Vector Institute Quantum Workshop

Host and Organizer

American Physical Society March Meeting 2021

Unsupervised Machine Learning Quantum Dynamics

EXTRA CURRICULAR

Graduate Mentor University of Toronto, Toronto
2024

- Mentored a high school student on a computer science project to investigate whether GPT would provide better answers on high school chemistry questions with retrieval augmented generation on a high school chemistry dataset.

Curriculum Director Project Include, Toronto
2019 - 2022

- A student-run organization that recruits university students to create a coding curriculum in Python, Java, and Javascript and subsequently teaches it to students from 9-18 years old in Toronto's priority neighborhoods.
- As the Curriculum Director, I led a team of student instructors to create curriculum and refine their presentation of the material they created.

SKILLS

Languages: Python, Javascript, HTML, CSS, C, Bash

Tools and Frameworks: Git, Linux, Pytorch, Tensorflow, Node, VueJS, React, CUDA