

Matthew Varona

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Education

University of Toronto

Toronto, Canada

DOCTOR OF PHILOSOPHY, COMPUTER SCIENCE

Beginning September 2024

- Research in data visualization literacy and human-computer interaction
- Advisor: Prof. Carolina Nobre

New York University Abu Dhabi

Abu Dhabi, UAE/New York, USA

BACHELOR OF SCIENCES, COMPUTER SCIENCE AND INTERACTIVE MEDIA (GPA: 3.778/4)

2024

- Capstone (honors thesis) advisor: Prof. Enrico Bertini, Northeastern University

Research Experience

Northeastern University - Khoury Visualization Lab

Remote

RESEARCH INTERN

May 2021 - April 2024

- Project: **Visualization of machine learning classifier boundary points**, with Prof. Enrico Bertini
- Built a Python library that computes decision boundary points of classifier models to support model interpretability.
- Designed and implemented novel interactive visualizations of boundary points using d3.js.
- Formalized the conditions necessary for boundary points to be useful assets in visual, example-based model validation.

Hasso Plattner Institute - Human-Computer Interaction Lab

Berlin, Germany

RESEARCH INTERN

May 2022 - August 2022

- Project: **Adaptive vector drawing toolsets for laser cutting**, with Prof. Patrick Baudisch
- Analyzed drawing workflows and interviewed makers to create a taxonomy of drawing paradigms for laser cutting outlines.
- Developed a Typescript+Node app that analyzes a set of laser-cut outlines to generate optimal toolsets for creating similar assets.

NYU Abu Dhabi - Center for Space Science

Abu Dhabi, UAE

RESEARCH ASSISTANT

October 2020 - June 2021

- Conducted linear regression, anomaly detection, and exploratory analysis on solar radiation data from Mars in support of the UAE's first-ever interplanetary space mission (Emirates Mars Mission).

Industry Experience

Sakay.ph

Remote

SOFTWARE ENGINEERING INTERN

September 2020 - October 2020

- Developed customer service chatbot, collaborating with UX and engineering teams.

Sakay.ph

Taguig, Philippines

DATA SCIENCE INTERN

May 2020 - August 2020

- Worked on transit stop data infrastructure and a visualization toolkit for analyzing transit demand vs. coverage.

Teaching Experience

Fall 2024 Teaching assistant for **CSC318 (The Design of Interactive Computational Media)** - University of Toronto

Fall 2020 Teaching assistant for **IM-UH 2310 (Decoding Nature)** - New York University Abu Dhabi

2019-2020 Debate coach at the **NYUAD High School Debate Workshop**

Personal Projects

Audibird: bird sounds from around the world

TECHNOLOGIES: P5.JS, JQUERY, JAVASCRIPT

May 2022

- Created an interactive visualization that showcases crowdsourced bird sounds submitted by birdwatchers around the globe.
- Developed a web app that aggregates data from the eBird, WikiData, and xeno-canto APIs and displays it on MapboxGL.

AI Got Hands

TECHNOLOGIES: KERAS, PYTHON

November 2021

- Trained a reinforcement learning agent to play the fighting game FightingICE, achieving 70% winrate against other agents.
- Extracted gameplay heuristics from AI behavior to generate tutorials for beginner fighting game players.

postcARds

TECHNOLOGIES: UNITY3D, C#

August 2021

- Developed an augmented reality museum app in collaboration with Berlin's Museum for Communication.
- Designed and built features allowing users to wield their phones as 3D paintbrushes on the museum's historical postcard collection.

Leadership and Extracurriculars

PAUSED: NYUAD Video Game Society

PRESIDENT

2023

- Hosted regular esports tournaments and managed a communal games account where students could vote on new games to buy.

First-Year Dialogue Program

FIRST-YEAR DIALOGUE FACILITATOR

Fall 2020

- Helped a tight-knit group of 10 first-year students adjust to college life through weekly group meetings and one-on-one support.

NYUAD Debate Society

VICE-PRESIDENT

Spring 2020

- Led debate workshops, organized travel arrangements for tournaments, advised junior debaters on argumentation and rhetoric.

CAUSE Philippines

SCHOLARS FOR SCHOLARS SPEAKER AND ADMISSIONS ADVISOR

Summer 2020

- Mentored high school students on the admissions process to international universities.