

# Thomas Twomey

Ann Arbor, MI | [ttwomey@umich.edu](mailto:ttwomey@umich.edu)

## EDUCATION

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### University of Michigan

Computer Science and Engineering, PhD program

Advisor: George Tzimpragos

Ann Arbor, MI

Aug. 2023 – Current

### Virginia Tech

College of Engineering, Bachelor of Science in Computer Science

College of Science, Bachelor of Arts in Economics

Graduated Summa Cum Laude, Cumulative GPA: 3.95/4.00

Blacksburg, VA

Aug. 2017 – Dec. 2020

## RESEARCH ARTIFACTS

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### On the Characterization of the Performance-Productivity Gap for FPGA

*IEEE International High-Performance Extreme Computing (HPEC) Conference, September 2022*

### Deep Learning Architectures for FSCV, a Comparison

*Preprint, <https://arxiv.org/abs/2212.01960>*

## PROFESSIONAL EXPERIENCE

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### Scientific Programmer / Data Analyst

June 2021 – May 2023

*Montague Lab : Fralin Biomedical Research Institute at Virginia Tech Carillon*

*Roanoke, VA*

- Developed, tested, and deployed machine learning models for prediction of in-vivo neurotransmitter concentrations
- Implemented and maintain automated in-vitro and in-vivo data processing pipelines for prediction, visualization, and validation purposes
- Developed software techniques to identify, quantify and suppress electrical noise from low amplitude voltammetry recordings
- Designed automated/robotic in-vitro data collection apparatus to increase data collection throughput by an order of magnitude and to increase quality of the data

### Undergraduate Research Assistant

Feb. 2020 – Dec. 2020

*SyNeRGy Lab : Virginia Tech Department of Computer Science*

*Blacksburg, VA*

- Developed High Level Synthesis and Register Transfer Language implementations of computing kernels (Sobel Filter, K-means clustering, FFT) for quantification of performance / productivity trade-off

### Undergraduate Teaching Assistant

Jan. 2019 – May 2019

*Virginia Tech Department of Computer Science*

*Blacksburg, VA*

- Guided 100 students on projects related to Linux Environments, C programming, and x86 Assembly
- Provided extensive help debugging student code, and promoted simple debugging techniques

## VOLUNTEER EXPERIENCE

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### Volunteer Research Assistant

Aug. 2020 – Dec. 2020

*Dr. Yang Yi's Lab, Virginia Tech Department of Electrical and Computer Engineering*

*Blacksburg, VA*

- Assisted with investigation of Spiking Neural Networks (SNN) for FPGA
- Performed cursory literature survey of existing SNN architectures and hardware implementations
- Conducted limited simulation of SNN models with PyTorch based library

### Volunteer Research Assistant

Feb. 2019 – May 2019

*Virginia Tech Department of Economics*

*Blacksburg, VA*

- Assisted with behavioral economics risk perception experiment
- Developed oTree(Django derivative) based web app for a behavioral economics experiment