Michael Vinh Pham

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Education

Sep. 2021 - May 2025 — **Swarthmore College**, B.A., Honors Economics and Mathematics, 3.7 GPA
Sigma Xi Honor Society, 2-year D3 XC/Track Student-Athlete (3x Centennial Conference Academic Honors), Swarthmore College Computer Society

Research Assistance

May 2024 - July 2024 (Full-time)
Sep. 2024 - Present (Part-time) — **Economics Research Assistant for Dr. Stephen O'Connell**, *Swarthmore Economics Department*
-Created DGE model, wrote Python scripts to numerically compute Steady States via Value Function Iteration, working on coding Transition Paths via Broyden's method
-Wrote Python scripts to perform welfare annuity equivalence calculations, summarize IMF GFS data, data visualization
-Read literature and modified Dynare scripts to incorporate human capital investment with dynamic complimentarity and self-productivity into macroeconomics models to assess tradeoffs of cutting social programs to alleviate Sub-Saharan Africa debt distress

Jan. 2024 - Present (Part-time) — **Economics Research Assistant for Stephanie Kestelman**, *5th-year Harvard Economics Ph.D. candidate*
-Wrote data preprocessing, machine learning, text analysis Python scripts to conduct sentiment analysis, sequence-to-sequence translation, word embedding unsupervised learning from LA City Planning Commission hearings audio files
-Developed API scripts, HTML parsing scripts using BeautifulSoup to scrape housing data
-Used Stata and Python to merge data, data-preprocessing

June 2023 - Sep. 2023 (Full-time) — **Machine Learning Research Assistant for Dr. Ryan Kastner and Dr. Curt Schurgers**, *University of California San Diego Computer Science and Engineering Department (REU)*
-Researched, experimented with CV techniques to semantically segment UAV, satellite imagery to track Mangrove Tree deforestation
-Created pipeline to source satellite data, geographic information system processing, feature engineer, run machine learning models
-Improved the lab's mangrove identification from 93% to 98% pixel-wise accuracy via experimenting with preprocessing techniques, architecture selection, training methods

Feb. 2023 - June 2023 (Part-time) — **Machine Learning Research Assistant for Dr. Xiaodong Qu**, *Swarthmore College Computer Science Department*
-Read 100+ machine learning for EEG classification papers and second-authored systematic review papers accepted to KDD and HCII conferences

Nov. 2022 - May 2023 (Part-time) — **Bioinformatics Research Assistant for Dr. Renuka Nayak**, *University of California San Francisco School of Medicine*
-Wrote R, Python Tensorflow scripts to analyze high-dimensional, sparse microbiome arthritis development data
-Developed new machine learning architecture achieving 30, 38, 44 ppt info gain on MCC score over best existing Deep Learning model when predicting Gender, Abx treatment, SKG/WT phenotypes/traits, respectively

Teaching Assistance

Fall 2024 — **Intermediate Microeconomics**
Fall 2024 — **Social Sciences Quantitative Lab (Stata)**
Spring 2024, Fall 2023 — **Introduction to Econometrics**
Spring 2024 — **Public Economics**
Fall 2022 — **Introduction to Economics**

Other Work Experience

May 2022 - August 2022 (Full-time)	**Quantitative Intern**, *Karner Blue Capital* -Researched mathematical financial literature to implement models such as Fama-French and CLA Semivariance into ESG firm's Portfolio Optimizer, outperforming previous optimizer by 19 ppt over 6-year backtests -Rewrote KBC's entire Portfolio Optimizer from scratch, transitioning from portfolio optimizer libraries to a fully implemented solution using only vanilla libraries such as Pandas and NumPy and added easy-to-use web interface for analysts using Flask

Personal

Programming Languages	*Expert:* Python. *Extensive Use:* Stata, R, SQL, C++/C, JavaScript. *Familiar:* x86 Assembly, MatLab
Data/ML Technologies	Pandas, PyTorch, Tensorflow, Hugging Face, SciKit, GIS (QGIS, Geopandas), BeautifulSoup
Other Technologies	Django, Next.js, HTMX, FastHTML, Tailwind, HTML/CSS, git, Docker, AWS
Citizenship	United States
Languages	English (Native), Vietnamese (C1), Spanish (B2), French (A2), Mandarin (A2)

Selected Works

2024	**How Universal Healthcare Affects Individuals' Choices: The Case of Seguro Popular**, *Advanced Econometrics Final Paper* This paper assesses the effects of Seguro Popular, a universal healthcare program implemented in Mexico, on individuals' labor force participation, family planning, and the take-up of womens' preventative cancer screenings. I exploit variation in roll-out of municipalities to find the intent-to-treatment effect using event study estimators with differential timing and use a machine learning based method, Matrix Completion, to assess the robustness of these results. I find that the implementation of Seguro Popular increases the target demographic for Mammogram take-up of such exams, has no significant effect on take-up of Papanicolaou Tests, and find some evidence to support the claim that Seguro Popular increased the amount of children women wanted to have. Finally, Seguro Popular had a negative effect on labor force participation, most notably among working males.
2023	**A Review of Machine Learning Algorithms for EEG Datasets** with Nathan Koome Murungi, Xufeng Caesar Dai, and Xiaodong Qu *Accepted:* **29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining** (August 2023). In this paper, we present a systematic literature review that explores the utilization of machine learning (ML) algorithms for analyzing datasets from Electroencephalography (EEG) based Brain-Computer Interfaces (BCIs). Our primary aim is to provide computer science students with a comprehensive and accessible overview of the role of machine learning in EEG analysis. By synthesizing and organizing recent research from 2020 onwards, our objective is to empower the target audience to develop a solid foundational understanding of the current state of ML-EEG research. Through this work, we intend to enhance the accessibility and comprehension of ML-EEG studies and contribute to advancing BCI technology.
2022	**Long COVID (Stimulus): Medium to Long-Term Effects of the Paycheck Protection Program on Unemployment** with Kendall Praitis-Hill, Sam Winickoff, and Ryan Jin, *Intermediate Econometrics Final Paper* This study estimates the impact of the federal Paycheck Protection Program (PPP) on unemployment rates using panel data of PPP loans at the county level provided by the Small Business Administration (SBA) and unemployment data from the Bureau of Labor Statistics. Results are mixed, and at best indicate only that PPP funding decreased unemployment in the short-term. However, inconsistency across several specifications suggests severe endogeneity problems, and thus we fail to draw meaningful conclusions about the long-term effects of PPP funding from our work.