

# Ethan Harvey

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## Highlights

- Ph.D. candidate in the Machine Learning Research Group at Tufts University
- 4+ years of applied experience in Python programming with emphasis on probabilistic machine learning
- 4+ years of academic experience with implementation details of deep neural networks using machine learning frameworks including PyTorch and TensorFlow
- 2+ years of teaching assistant experience for the graduate level machine learning course (Python) and data structures (C/C++) at Tufts University

## EDUCATION

**Tufts University**, Medford, MA

*Fall 2021 – Present*

Ph.D. in Computer Science

Relevant Coursework: Learning from Limited Labeled Data

**Tufts University**, Medford, MA

*Fall 2021 – Spring 2023*

M.S. in Computer Science, Cumulative GPA: 4.0

Relevant Coursework: Convex Optimization, Deep Neural Networks, Statistical Pattern Recognition, Machine Learning, Mathematical Aspects of Data Analysis

**Grove City College**, Grove City, PA

*Fall 2017 – Spring 2021*

B.S. in Computer Science, Mathematics minor

## RESEARCH EXPERIENCE

**Tufts University**, Medford, MA

*September 2021 – Present*

*A private R1 research university.*

**Research Assistant, Advisor: Michael C. Hughes**

Collaborating with Tufts Medical Center and Kaiser Permanente Southern California to build models that can diagnose stroke and dementia from CT and MRI images of the brain.

Helped write preliminary work for NIH grant R01-NS134859 (funded \$2,894,758) which resulted in an archival Proceedings Track paper at the 3rd *Machine Learning for Health (ML4H)* symposium (see publications).

Priority user of Tufts University High Performance Computing (HPC) system including 40 NVIDIA A100 GPUs.

**Philips**, Cambridge, MA

*May 2022 – August 2022*

**Machine Learning Intern, Philips Research**

Developed an ensemble tree model from millions of patient records for early detection of hospital-acquired infections. Compared general and infection-specific machine learning models.

**UnitedHealth Group**, Minnetonka, MN

*June 2021 – August 2021*

**Data Science Intern, OptumLabs**

Developed a deep neural network to predict estimated glucose values based on sleep metrics from wearable fitness data and glucose monitoring data.

Collaborated with internal data scientists on reinforcement learning project.

**Grove City College**, Grove City, PA

January 2021 – May 2021

An ABET accredited college.

**Research Assistant, Advisor: Jonathan O. Hutchins**

Collaborated with Highmark Health to research the application of unsupervised learning on acoustic signals as a surrogate for quantitative measurements of human foot pressures during walking and running.

## TECHNICAL SKILLS

**Programming Languages:** Python, C/C++, Java, MATLAB

**Machine Learning Frameworks:** PyTorch, TensorFlow, JAX, scikit-learn

**Data Analysis Tools:** NumPy, Pandas, SciPy, Matplotlib, Spark, SQL, NoSQL

**Cloud Computing Services:** Amazon Web Services, Google Cloud Platform, Microsoft Azure

## HIGHLIGHTED PUBLICATIONS

**Ethan Harvey\***, Mikhail Petrov\*, and Michael C. Hughes. Transfer Learning with Informative Priors: Simple Baselines Better than Previously Reported. *Transactions on Machine Learning Research (TMLR)*, 2024. ISSN 2835-8856.

**Ethan Harvey**, Wansu Chen, David M. Kent, and Michael C. Hughes. A Probabilistic Method to Predict Classifier Accuracy on Larger Datasets given Small Pilot Data. In *Machine Learning for Health (ML4H)*, 2023. (28.7% acceptance rate)

## TEACHING EXPERIENCE

**CS 135 Machine Learning Teaching Assistant**, Tufts University, Medford, MA

Spring 2023

Developed Python unit testing framework that automatically grades student assignments.

**CS 135 Machine Learning Teaching Assistant**, Tufts University, Medford, MA

Fall 2022

**CS 135 Machine Learning Teaching Assistant**, Tufts University, Medford, MA

Spring 2022

Taught weekly recitations on topics including linear and polynomial regression, perceptron learning, evaluating model performance, logistic regression, kernels, support vector machines, neural networks, convergence and non-convergence, parameter tuning, decision trees, dynamic programming, reinforcement learning, and k-means clustering.

**CS 15 Data Structures Teaching Assistant**, Tufts University, Medford, MA

Fall 2021

Lectured on topics including lists, complexity, queues, stacks, recursion, binary search, sets, and trees.

Worked with infrastructure team to design, maintain, and test programs that automatically grade student assignments.

## GRANTS

**National Institutes of Health (NIH)**, \$2,894,758

February 2023 – January 2026

Helped write preliminary work for *Covert Cerebrovascular Disease Detected by Artificial Intelligence (C2D2AI): A Platform for Pragmatic Evidence Generation for Stroke and Dementia Prevention*.

Investigators: David M. Kent (PI, Tufts Medical Center), Michael C. Hughes (Tufts University), and Wansu Chen (Kaiser Permanente Southern California)

**Alzheimer's Drug Discovery Foundation (ADDF)**, \$599,788

October 2023 – April 2025

Funded by *Covert Cerebrovascular Disease Detected by Artificial Intelligence (C2D2AI): Pilot Investigation for Pragmatic Neuroimaging Biomarkers for Future Stroke and Dementia Risk*.

Investigators: David M. Kent (PI, Tufts Medical Center), Michael C. Hughes (Tufts University), and Wansu Chen (Kaiser Permanente Southern California)

## HONORS & SCHOLARSHIPS

**Tufts University Full Tuition Scholarship 2024**

\$9,950 scholarship based on academic merit.

**Tufts University Full Tuition Scholarship 2023**

\$9,660 scholarship based on academic merit.

**Tufts University Full Tuition Scholarship 2022**

\$9,378 scholarship based on academic merit.

**Tufts University Full Tuition Scholarship 2021**

\$9,194 scholarship based on academic merit.

**Dean's List with High Distinction, Grove City College, Spring 2021**

Honor based on academic merit.

**Grove City College General College Scholarship 2020**

\$4,000 scholarship based on academic merit.

**Grove City College Arlene and James Adams Scholarship 2019**

\$3,400 scholarship based on academic merit.

**Grove City College Timson-Eaton Student Aid Fund 2018**

\$4,100 scholarship based on academic merit.

## ACADEMIC SERVICES

**Reviewer:**

- 2024 – Conference on Health, Inference, and Learning (CHIL); Machine Learning for Healthcare (MLHC); Transactions on Machine Learning Research (TMLR); Machine Learning for Health (ML4H)