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, Advisor: Michael C. Hughes

Thesis Title: Probabilistic Methods for Building Medical Imaging Classifiers from Limited Labeled Data
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.
- Delivered preliminary results that led to key figure on data adequacy in NIH grant R01-NS134859 (funded $3 million).
- 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 model.

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.

HIGHLIGHTED PUBLICATIONS

Ethan Harvey*, Mikhail Petrov*, and Michael C. Hughes. Learning the Regularization Strength for Deep Fine-Tuning via a Data-Emphasized Variational Objective. In *NeurIPS Workshop on Fine-Tuning in Machine Learning (FITML@NeurIPS)*, 2024.

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. (Presented at NeurIPS 2024 poster session)

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)

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

TEACHING EXPERIENCE

CS 135 Machine Learning Teaching Assistant, Tufts University, Medford, MA *Spring 2022, Fall 2022, Spring 2023*

- Developed Python unit testing framework that automatically grades student assignments.
- 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.

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@NeurIPS 2024); NeurIPS Workshop on Fine-Tuning in Modern Machine Learning (FITML@NeurIPS 2024)