Ethan Harvey

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Cover Letter

I am writing to express my interest in the Lecturer position in the Department of Computer and Information Science at the University of Pennsylvania. I am a fifth year Ph.D. candidate in the machine learning research group at Tufts University, expecting to graduate in May 2026. I am especially interested in teaching courses on artificial intelligence, machine learning, and data science from a probabilistic perspective.

At Tufts University, I was a teaching assistant for the undergraduate data structures course for a semester and the graduate level machine learning course for three semesters. As a teaching assistant for CS 15 Data Structures, I taught weekly recitations; lectured on topics including lists, complexity, queues, stacks, recursion, binary search, sets, and trees; and worked with the infrastructure team to design, maintain, and test programs that automatically grade student assignments. As a teaching assistant for CS 135 Machine Learning, I led a team of eight graduate and undergraduate teaching assistants to hold office hours and grade 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; and developed a Python unit testing framework to automatically grade student assignments. These experiences have reinforced my desire to teach at a university.

My research has been focused on machine learning for healthcare, probabilistic machine learning, and Bayesian deep learning. At Tufts University, I have collaborated with Tufts Medical Center and Kaiser Permanente to develop deep neural networks to classify covert cerebrovascular disease and predict time-to-event outcomes for stroke and dementia using CT and MRI brain scans. I developed a probabilistic method to extrapolate classifier accuracy to larger datasets that led to a key figure on data adequacy in NIH grant R01-NS134859. Grant reviewers highlighted this work as influential in the decision to fund the application $3 million. I have presented papers at NeurIPS (Journal-to-Conference Track and Workshop) and published papers in Transactions on Machine Learning Research (TMLR) and Machine Learning for Health (ML4H). Through these experiences, I have developed the ability to communicate complex ideas to a diverse audience, an essential skill for fostering an inclusive classroom environment.

Thank you for considering my application. I look forward to the possibility of teaching in the Department of Computer and Information Science at the University of Pennsylvania.