Leonard Tang

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Education

HARVARD UNIVERSITY Cambridge, MA
A.B. Candidate in Mathematics and Computer Science May 2023

- Selected Coursework: Real and Functional Analysis, Applied Linear Algebra Methods, Data Structures and Algorithms, Probability, Data and Economics, Theory of Computation (Graduate), Data Science (Graduate)
- GPA: 3.96/4.00

Professional Experience

AMAZON
Software Development Engineer Intern Seattle, WA
June 2021 – August 2021

GAMALON AI Boston, MA
Machine Learning Engineering Intern January 2021 – May 2021

- Using Python and in-house C probabilistic programming libraries to research and develop core company **Idea Learning** algorithm for inducing restricted **Probabilistic Context-Free Grammars**
- Designed and programmed graph-based **Genetic Algorithm** for **parse-tree manipulation**, including genetic operators, utterance loss function, parallelized training pipeline, and Gumbel-Max Sampler
- Built and maintained a **suite of CLI tools** using Bash, Python, Expectation Maximization, and GPT-3 for model-building, significantly reducing manual Business Analyst labor from **over 4 weeks to ~1 day**
- Helped create a patent-pending question clustering and response interface with **Retrieval-Augmented Generated** answer suggestions to enhance client chatbot language models with new knowledge

HARVARD MATH DEPARTMENT Cambridge, MA
Course Assistant September 2020 – December 2020

- Course Assistant for Math 22a: Linear Algebra and Vector Calculus I (Proof-Based)
- Graded problem sets, held office hours, and taught seminars on linear algebra in machine learning

CENTER FOR BRAINS, MINDS, AND MACHINES Boston, MA
Research Assistant May 2020 – September 2020

- Developed top-down, context-aware object recognition architectures and contextual adversarial attacks
- Built graph-based convolutional neural networks using deep learning libraries like PyTorch and MATLAB
- Generated synthetic images with systematically altered contextual properties using Python and Unity
- Designed and implemented human recognition experiments using Amazon MTurk and JavaScript

Selected Extracurricular Activities

DATAMATCH Cambridge, MA
Director of Algorithm October 2019 – Present

- Improved algorithm's user-to-user compatibility score by replacing Jaccard Similarity response metric with more semantically nuanced sentence embedding techniques, including **Doc2Vec** and **Sentence-BERT**
- Devised and programmed various **novel inter-question weighting** metrics, including Drop-Max Deviation and Inverse-Proportion Significance, to account for distribution polarity in survey responses
- This year's iteration of the matchmaking algorithm matched **over 42,000 students** across **34 universities**

Skills & Interests

Technical Skills: Python, PyTorch, LaTeX, MATLAB, Java, HTML, CSS, Tableau, and Microsoft Suite
Languages: Mandarin (fluent), Shanghainese (professional), and French (conversational)
Interests: Blues guitar, classical violin, NBA, Alain de Botton, Elon Musk's Twitter account, and the Grateful Dead