NATALIE ABREU

Highland Park, IL | natalieabreu@g.harvard.edu | www.linkedin.com/in/natalie-abreu | (224) 300-3864

EDUCATION

Harvard University, Paulson School Of Engineering And Applied Sciences — **Cambridge, MA**
PhD, Computer Science — **August 2023 - (Exp) May 2029**
- Recipient of Kempner Institute Graduate Fellowship
- Advised by Boaz Barak within the Harvard ML Foundations group

University of Southern California, Viterbi School of Engineering — **Los Angeles, CA**
BS, Computer Science | Minor in Mathematics — **August 2019 - May 2023, GPA: 4.00**
- Recipient of USC Presidential Scholarship & Viterbi Engineering Research Fellowship

Technical Skills: Python, C++, JavaScript, Java

RESEARCH EXPERIENCE

MIT Lincoln Laboratory - *Summer Research Intern, Student Technical Assistant* — **May 2022 - May 2023**
- Implemented semantically targeted adversarial training as new method of reducing mistake severity of neural networks
- Trained and evaluated models with configurable environments using the rai-toolbox and hydra-zen libraries with PyTorch
- Designed experiments to investigate the use of non-robust features on semantic alignment of classes in the proposed method

USC Automatic Coordination of Teams (ACT) Lab - *Research Assistant* — **September 2019 - May 2022**
- Developed supervised learning method to efficiently solve multi-agent pathfinding on warehouse environments
- Created warehouse environment to evaluate methods of package/task assignment for multi-agent systems

TEACHING EXPERIENCE

University of Southern California - *Course Producer (CSCI 102, CSCI 270, CSCI 475)* — **August 2020 - May 2023**
- Served as a course producer for Fundamentals of Computation (CSCI 102), Introduction to Algorithms (CSCI270), and Theory of Computation (CSCI 475) courses over a number of semesters
- Responsibilities included holding office hours, leading weekly discussion sections, and helping to answer questions during lecture

INDUSTRY EXPERIENCE

Google - *SWE Intern* — **May 2021 - August 2021**
- Authored pipeline to automate data scraping, model training, and evaluation for a Machine Learning based model used for triggering logic of a Google Search feature
- Internationalized ML models for Portuguese and Spanish locales using this pipeline, which is projected to save hundreds of thousands of dollars in compute power for Google Search

Google - *STEP Intern* — **May 2020 - August 2020**
- Completed fullstack web application project using HTML/CSS, Javascript, Java, and Google Cloud Platform within a three person team
- Created platform for users to learn about local environmental issues and explore opportunities to become more environmentally friendly, leveraging the Google Calendar and Maps APIs as well as authenticating users with the Google Sign-In API

PROJECTS & EXTRACURRICULARS

Code the Change - *VP of Projects (2021 - 2022), Developer (2019 - 2021, 2022 - 2023)* — **September 2019 - May 2023**
- Developed software projects for non-profit organizations in LA area, working in a team of designers and developers
- Designed and led onboarding process for new members to introduce web development concepts and React.js

Affordable South LA Project - *Group Project through Code the Change* — **September 2020 - May 2021**
- Developed website that allows residents to share their experiences and provide resources to help with residency issues
- Mentored and reviewed code for two new members, teaching full stack development using React, Express, Node.js and Postgres through pair programming and weekly meetings

USC Center for AI in Society's Student Branch - *VP of Curriculum, Curriculum Lead* — **September 2019 - May 2022**
- Led curriculum program to introduce new members to AI/ML techniques, which involved conducting weekly presentations for the incoming curriculum cohort and managing small curriculum groups by working with Curriculum Leads
- Led weekly small group lessons as a Curriculum Lead to reinforce AI/ML concepts taught in weekly presentations as well as provided new members with experience in Keras and TensorFlow through introductory notebooks in Google Colab

PRESENTATIONS

ICML 2023 Workshop DMLR — **2023**
- Accepted to present work on "Addressing Discrepancies in Semantic and Visual Alignment in Neural Networks" at ICML 2023 Workshop on Data-centric Machine Learning Research following work at MIT Lincoln Laboratory [https://arxiv.org/abs/2306.01148]

NeurIPS 2022 Workshop on Progress and Challenges in Building Trustworthy Embodied AI — **2022**
- Accepted to present work on "Addressing Mistake Severity in Neural Networks with Semantic Knowledge" following work at MIT Lincoln Laboratory [https://arxiv.org/abs/2211.11880]

AAAI-2022 Undergraduate Consortium — **2022**
- Accepted to present at AAAI-UC poster session on "Efficient Deep Learning For Multi Agent Path Finding" following work in the ACT Lab as well as participate in mentorship program [https://ojs.aaai.org/index.php/AAAI/article/view/21697]

vGHC Poster Presentation — **2021**
- Accepted to speak at vGHC poster session on "Efficient Deep Learning For Multi Agent Path Finding" following work in the ACT Lab