MYRA CHENG

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Education

California Institute of Technology (Caltech) 2018 - 2022 (expected)
BS in Computer Science and History, 4.1/4.0 GPA.
Studied abroad in exchange program at the University of Cambridge, Fall 2021.

Research Experience

DeepMind Research Engineer Intern 2021
Developed dataset and framework for benchmarking and detecting microaggressions in large language models (LLMs). Also contributed to DeepMind's paper on the social and ethical risks of LLMs.

Microsoft Research Research Intern 2021
Investigated gender bias in automated recruiting. Developed framework for analyzing the limitations of existing algorithmic fairness techniques in accounting for social norms. Published at ICML workshop and under review for journal publication. Supervised by Adam Tauman Kalai.

Caltech Undergraduate Research Assistant 2019 - 2021
Machine learning with applications to science and medicine. Supervised by Yisong Yue.

- Designed hierarchical search algorithms for program synthesis with applications to behavioral neuroscience. (co-PI: Swarat Chaudhuri)
- Built human-in-the-loop preference learning algorithms for high-dimensional Bayesian optimization on robotic assistive devices. Published at ICML workshop and IROS. (co-PI: Joel Burdick)
- Developed generative model-based methods for detecting and interpreting visual features of black holes. Presented at the Event Horizon Telescope Collaboration. (co-PI: Katie Bouman)

Nuro Machine Learning Research Intern 2020
Developed preference-based reinforcement learning algorithms for self-driving car trajectory planning. Built an end-to-end system including data pipeline, model training, simulation tests, and failure analysis. Started a reading group on algorithmic bias and fairness.

Stanford Research Intern 2017 - 2018
Conducted research applying machine learning to detect multiple sclerosis from MRI images. Published at MICCAI workshop. Supervised by Daniel Rubin.

Engineering Experience

Coursera Software Engineer Intern & Kleiner Perkins Engineering Fellow 2019
Built natural language processing algorithm to classify search queries and understand user behavior. Implemented personalized course recommendations.

Bloomberg Software Engineer Intern 2018
Built file management tools for an interactive data science platform in Bloomberg Terminal.

Publications

M. Cheng, M. De-Arteaga, L. Mackey, A. T. Kalai. Social Norm Bias: Residual Harms of Fairness-Aware Algorithms. *ICML Machine Learning for Data Workshop 2021* (Spotlight Talk), *ICML Socially Responsible Machine Learning Workshop 2021*, under review for journal publication.

L. Weidinger et al. [including **M. Cheng**], Ethical and Social Risks of Harm from Language Models. arXiv preprint. dpmd.ai/llm-ethics

M. Tucker, **M. Cheng**, E. Novoseller, R. Cheng, Y. Yue, J. Burdick, A. Ames. Human Preference-Based Learning for High-dimensional Optimization of Exoskeleton Walking Gaits. *IROS 2020.*

M. Cheng, E. Novoseller, M. Tucker, R. Cheng, Y. Yue, J. Burdick. Preference-Based Bayesian Optimization in High Dimensions with Human Feedback. *ICML 2020 RealML Workshop.*

M. Cheng, A. Galimzianova, Z. Lesjak, Z. Spiclin, C. Lock, D. Rubin. A Multi-scale Multiple Sclerosis Lesion Change Detection in a Multi-sequence MRI. *In LNCS book, Deep Learning in Medical Image Analysis and Multimodal Learning for Clinical Decision Support, MICCAI 2018.*

Awards

Caltech Eleanor Searle Prize in Law, Politics, and Institutions (2021)
Barry M. Goldwater Scholarship (2020)
Adobe Research Women-in-Technology Scholarship (2019)
Snap Research Scholarship (2019)
International Conference for Machine Learning (ICML) Travel Grant (2019)

Teaching and Advising

Caltech Teaching Assistant 2019 - present
Taught "Signal-Processing Systems & Transforms" (EE 111). Will teach "Networks: Structures & Economics" (CS 144) and "Algorithmic Fairness & Justice" (CS 12) in 2022.

Caltech COMPASS Mentor 2020 - present
Mentored students regarding academic, professional, and personal development in the "Women Mentoring Women" program.

Caltech Peer Writing Fellow 2019 - present
Held weekly office hours to help students with academic and technical writing. Hosted essay workshops for humanities classes.

Prison Education Project Volunteer 2020
Taught "Introduction to Autobiographical Writing" at the California Institution for Women.

AddisCoder Teaching Assistant 2018
Taught data structures and algorithms to high school students in Addis Ababa, Ethiopia.

Activities

NeurIPS ML4D Program Committee 2020, 2021
Reviewed submissions for Machine Learning for the Developing World Workshop.

Mechanism Design for Social Good (MD4SG) Participant 2020 - present
Member of the "Bias, Discrimination, and Fairness" and "Algorithms, Law, and Policy" working groups. Presented work on gender bias in computer vision.

Caltech TechReach Cofounder and President 2018 - present
Developed initiative to explore the human and societal impacts of technology through community events and student projects. Organized and taught "CS + Social Good" (CS 81), a class where student teams built technical projects for nonprofits.

Invited Panelist 2018, 2019, 2020
Presented at the US-Spain Forum in Jerez, Spain; Stanford and Berkeley AI4ALL; MIT Technology Review; Caltech Information Science and Technology Council; and AI Summit with Van Jones.

Caltech Y Executive Committee 2018 - present
Served as student leader and voting member of the executive committee. Organized volunteering, civic engagement activities, and cultural exchange trips.

Skills

Programming Languages: Python, C++, C, Java, SQL, Scala, MATLAB, JavaScript, HTML/CSS
Tools: TensorFlow, PyTorch, Keras, LaTeX, Git, NLTK, MTurk
Natural Languages: English, French, Chinese