# MYRA CHENG

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**Education**

**California Institute of Technology (Caltech)** 2018 - 2022 (expected)
BS in Computer Science and History, 4.1/4.3 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 and subtle biases in large language models. Contributed to paper on the ethical and social risks of language models. Publications under internal review.

**Microsoft Research** Research Intern 2021
Investigated gender bias in automated recruiting. Developed framework for analyzing how fairness-aware algorithms' predictions rely on social norms. Publication under review. 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.

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" 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) Working Group** 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