# Peter Chang

pchang534@gmail.com 423-534-7982 pwchang.github.io

Motivated individual and team leader with several years of experience leading R&D in machine learning, algorithmic fairness, and anomaly detection. Interested in roles developing equitable and impactful predictive models.

## EXPERIENCE

**Harvard University** **Cambridge, MA**
*Research Associate* *Aug 2022 - Present*

- First author on paper developing methodology that exponentially improves statistical power to audit machine learning models for populations at high risk of data bias and identifies possible fairness disparities. Experimentally verified on financial, criminal, and educational data and presented at ICML 2024.
- Lead researcher on project quantifying how bias can enter, propagate, be detected, and be mitigated throughout different stages of predictive models. Collaborated with developers across multiple universities to compile anomaly detection algorithms and bias mitigation techniques into a single code base. Ran simulations on diabetes datasets to simulate bias in healthcare systems.
- Supported and instructed junior researchers on differential privacy and anomaly detection.
- Author of leading survey paper detailing data privacy, safety, and regulatory risks inherent in Large Language Models (LLMs) along with methodology for private solutions. Developed breadth of knowledge of over 100 leading papers, pieces of legislation, and regulations on generative AI and innovative foundation models.

**Thomson Reuters Special Services** **McLean, VA**
*Data Scientist* *Jul 2020 - Jul 2022*

- Lead data scientist and manager for team identifying shell companies from public record. Built pipeline for combining multiple data sources, managed team of analysts, and communicated progress to senior leadership.
- Founder of AI Ethics team. Led multiple company-wide presentations on data bias, AI governance, and equal employment compliance. Developed internal best practice recommendations for responsible and ethical AI use.
- Development of graph-based methods for red team identification of social media bots and phishing attempts. Built data scraping pipelines and Flask dashboard for visualizing results to non-technical audiences.

**Johns Hopkins Applied Physics Lab** **Laurel, MD**
*Associate Professional (Data Science)* *Jul 2018 - Jun 2020*

- Rotational program in health care analytics, low-temperature physics modeling, and combat systems research.
- Optimized models, visualized data, built data pipelines, and wrote reports to communicate to clients.

**National Collegiate Breaking Association** **Boston, MA**
*President & Founder* *Apr 2022 - Present*

- Supervise team of 15+ nationwide volunteers promoting intercollegiate competitions and cultural education.
- Organize annual national summit for over 200 college students and community leaders.

## PUBLICATIONS & TALKS

- Chang et al. "Feature Importance Disparities for Data Bias Investigations" (2024), presented at ICML.
- Neel and Chang, "Privacy Issues in Large Language Models: A Survey" (2024), available on arXiv.
- "Auditing for Fairness" (2023), invited talk at Thomson Reuters.
- Srivastava et al. "Beyond the Imitation Game: Quantifying and Extrapolating the Capabilities of Language Models." (2023), published in TMLR.
- Torene, Spencer, et al. "Automated Hashtag Hierarchy Generation Using Community Detection & the Shannon Diversity Index, with Applications to Twitter & Parler." (2022), published in IJSC.

## EDUCATION

**Harvard University** **Cambridge, MA**
*M.S. Computational Science and Engineering, GPA: 3.7* *2017 - 2018*
*B.A. Physics, GPA: 3.6* *2014 - 2018*

Teaching Assistant: *Introduction to Data Science, Advanced Scientific Computing, Electromagnetism*

## SKILLS

- Technical: Python, SQL, Git, PyTorch, Bash, R, C, Flask, Snowflake
- Expertise: Machine Learning, Algorithmic Fairness, Anomaly Detection, Data Privacy, Data Analysis