

Arjun Subramonian (they/them)

UCLA Computer Science Department

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Publications: [Semantic Scholar](#), [Google Scholar](#)

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Research Interests

graph machine learning, natural language processing, fairness, biases, ethics

Education

PhD in Computer Science; University of California, Los Angeles (2021-2026), NSF MENTOR '22 Fellow, Eugene V. Cota-Robles Fellow, *GPA*: 4.0

Advisors: Yizhou Sun, Kai-Wei Chang

BS in Computer Science; University of California, Los Angeles (2018-2021), *GPA*: 3.927, Summa Cum Laude

Work Experience

Research Intern, FAIR Society and Responsible AI (2022)

Location: Paris, France

Description: I examined how “expressive power” is conceptualized and operationalized in graph learning.

Research Intern, Microsoft Research FATE (2022)

Location: Montréal, Québec, Canada

Description: I examined how NLP tasks are conceptualized and operationalized.

Research Engineering Intern, AllenNLP, Allen Institute for Artificial Intelligence (2021)

Location: Seattle, Washington

Description: I developed [AllenNLP's fairness library](#), which makes fairness metrics, training-time fairness algorithms, bias mitigation algorithms, and bias metrics accessible to researchers and practitioners of all levels. I also wrote a [guide chapter](#), [documentation](#), and a [blog post](#) to communicate my work and make usage of the fairness library accessible.

Privacy Research Intern, Snap, Inc. (2021)

Location: Los Angeles, California

Description: I developed algorithms to improve the safety of friend suggestions for underage users on Snapchat while preserving the privacy of all users. I further contributed to the development of Snap's Responsible AI principles. I also worked on machine learning for ads and monetization.

Software Engineering Intern, Microsoft Corporation (2020)

Location: Sunnyvale, California

Description: I crafted a peer-to-peer-anonymous, secure backend technical design for a feature to report harassment on Microsoft Teams.

Software Engineering Intern, Get Heal, Inc. (2019)

Location: Los Angeles, California

Description: I engineered full-stack integrations of mechanisms used every day at Heal that enhance the automated routing of medical providers, like automated triaging, doctor-assistant match prevention, and phone number verification. I also adapted Heal's automated routing algorithm to optimally schedule telemedicine visits, which greatly benefits patients during the COVID-19 pandemic.

Deep Learning Engineer, Sike AI (2018-2019)

Location: Los Angeles, California

Description: I designed, implemented, and trained the in-house deep learning model for working style-analysis from video with TensorFlow.

Publications

Subramonian, Arjun, Kai-Wei Chang, Yizhou Sun. “[On the Discrimination Risk of Mean Aggregation Feature Imputation in Graphs](#).” Accepted to **NeurIPS 2022**.

Subramonian, Arjun, Levent Sagun, Kai-Wei Chang, Yizhou Sun. “[Group Excess Risk Bound of Overparameterized Linear Regression with Constant-Stepsize SGD](#).” Accepted to **Trustworthy and Socially Responsible Machine Learning @ NeurIPS 2022**.

Talat, Zeerak, Aurélie Névél, Stella Biderman*, Miruna Clinciu*, Manan Dey*, Shayne Longpre*, Alexandra Sasha Luccioni*, Maraim Masoud*, Margaret Mitchell*, Dragomir Radev*, Shanya Sharma*, **Arjun Subramonian***, Jaesung Tae*, Samson Tan*, Deepak Tunuguntla*, Oskar van der Wal*. “[You Reap What You Sow: On the Challenges of Bias Evaluation Under Multilingual Settings](#).” Accepted to **Challenges & Perspectives in Creating Large Language Models @ ACL 2022**.

Subramonian, Arjun. “[On Dyadic Fairness: Exploring and Mitigating Bias in Graph Connections](#).” Accepted to **ICLR 2022 Blogpost Track (32% acceptance rate)**.

Dev, Sunipa, Masoud Monajatipoor*, Anaelia Ovalle*, **Arjun Subramonian***, Jeff M Phillips, and Kai-Wei Chang. “[Harms of Gender Exclusivity and Challenges in Non-Binary Representation in Language Technologies](#).” Accepted to **EMNLP 2021 (Oral – 9.8% acceptance rate)**, **WiML Un-Workshop @ NeurIPS 2021**.

Subramonian, Arjun. “[Fairness and Bias Mitigation: A practical guide into the AllenNLP Fairness module](#).”

Zhang, Shichang, Ziniu Hu, **Arjun Subramonian**, and Yizhou Sun. “[Motif-Driven Contrastive Learning of Graph Representations](#).” Accepted to **SSL@WWW 2021**.

Subramonian, Arjun. “[MOTIF-Driven Contrastive Learning of Graph Representations](#).” Accepted to **Undergraduate Consortium @ AAAI 2021**.

Brown, Calvin, Derek Tseng, Paige M. K. Larkin, Susan Realegeno, Leanne Mortimer, **Arjun Subramonian***, Dino Di Carlo, Omai B. Garner, and Aydogan Ozcan. “[Automated, Cost-Effective Optical System for Accelerated Antimicrobial Susceptibility Testing \(AST\) Using Deep Learning](#).” **ACS Photonics** 2020 7 (9), 2527-2538 DOI: 10.1021/acsp Photonics.0c00841

Crandall, Sara, Graeme H. Smith, **Arjun Subramonian**, Kelly Ho, and Evelyn M. Cochrane, “[Estimating the Ages of FGK Dwarf Stars Through the Use of GALEX FUV Magnitudes](#).” **Astronomical Journal** 2020 160, 217, DOI: <https://doi.org/10.3847/1538-3881/abb77d>

QueerInAI, Organizers of, Hetvi Jethwani*, **Arjun Subramonian***, William Agnew*, MaryLena Bleile*, Sarthak Arora*, Maria Ryskina*, Jeffrey Xiong*. “[Queer in AI](#).” **XRDS: Crossroads, The ACM Magazine for Students, Volume 28, Issue 4**.

QueerInAI, Organizers of, Ashwin S*, William Agnew*, Hetvi Jethwani*, and **Arjun Subramonian***. “[Rebuilding Trust: Queer in AI Approach to Artificial Intelligence Risk Management](#).” **Queer in AI Workshop @ NeurIPS 2021**.

QueerInAI, Organizers of, A Pranav, MaryLena Bleile, **Arjun Subramonian**, Luca Soldaini, Danica Sutherland, Sabine Weber, Pan Xu, William Agnew, Michael McKenna, and Nyx McLean. “[How to Make Virtual Conferences Queer-Friendly: A Guide](#).” Accepted to **WiNLP 2021 Workshop @ EMNLP 2021**.

Subramonian, Arjun. “[Queer | Inclusive | Badass.](#)” Accepted to Resistance AI Workshop @ NeurIPS 2020.

Invited Talks and Panels

2022 - Accessibility and Inclusion Panel, [Neuromatch Academy](#)
2022 - “Gender as a Variable in NLP” Panel, [NAACL 2022 Queer in AI Workshop](#)
2022 - Prioritizing Grassroots D&I Activism: Queer in AI, [Microsoft Research Montréal Diversity, Inclusion, Belonging Meeting](#)
2022 - Guest Lecture: Bias in Natural Language Processing, [COM SCI 263: NLP, UCLA](#)
2022 - UPE Graduate School Panel, [UCLA](#)
2022 - Co-Opting AI: Queer, [NYU’s Institute for Public Knowledge](#)
2022 - Queer in AI: Making AI Queer-Inclusive and Prioritizing Grassroots D&I Activism, [Humlab, Umeå University](#)
2022 - Prioritizing Grassroots D&I Activism: Queer in AI, [AAAI 2022 Workshop on Diversity in Artificial Intelligence](#)
2022 - Prioritizing Grassroots D&I Activism: Queer in AI and “How Do We Improve DEI in AI?” Panel, [Nike Sport+AI Conference](#)
2022 - Rebuilding Trust: Making Artificial Intelligence Queer-Inclusive, [QWER Hacks 2022](#)
2021 - Eye on A.I.: Equity & Inclusion in A.I. Technology, [Toronto Public Library](#)
2021 - ACM AI at UCLA Research Panel, [UCLA](#)
2021 - Harms of Gender Exclusivity and Challenges in Non-Binary Representation in Language Technologies, [EMNLP 2021](#)
2021 - Safer Privacy-Preserving Friend Suggestions, [Snap, Inc.](#)
2021 - [Machine Learning Justice](#), [Catalysts for Change](#)
2021 - How Can I Make My Hackathon Queer-Inclusive? ([Slides](#), [Video](#)), [Hackcon IX](#)
2021 - [Intersectionality Panel](#), [NAACL 2021](#)
2021 - [Queer in AI Inclusive Conference Guide DEI Update](#), [Allen Institute for Artificial Intelligence](#)
2021 - [Queer in AI Panel](#), [UCLA](#)
2020 - [Fair Machine Learning](#), [Microsoft Garage Brown-Bag](#)
2019 - [An Automated and Cost-Effective System for Early Antimicrobial Susceptibility Testing Using Optical Fibers and Deep Learning](#), [UCLA HHMI Day 2019](#)

Honors and Awards

2022 - [NSF MENTOR ’22 Fellowship](#), [UCLA](#)
2022 - [AI2 Outstanding Intern of the Year Award](#) (1 of 3 interns recognized)
2021 - [MLH Top 50 Class of 2021](#)
2021 - [UCLA Samueli School-Wide Outstanding Bachelor of Science](#)
2021 - [UCLA Chancellor’s Service Award](#)
2021 - [UCLA Samueli Engineering Achievement Award in Student Welfare](#)
2021 - [Eugene V. Cota-Robles Fellowship](#), [UCLA](#)
2021 - [Graduate Research Assistantship](#), [UCLA](#)
2021 - [Boeing Company Scholarship](#), [UCLA](#)
2021 - [Brian J. Lewis Endowment](#), [UCLA](#)
2020 - [Computing Research Association Outstanding Undergraduate Researcher Honorable Mention](#)
2020 - [AAAI Undergraduate Consortium](#) (1 of 14 accepted out of 82 applicants)
2020 - [IBM Quantum Challenge](#) (1 of 574 winners out of 1745 participants)
2020 - [Out for Undergrad Tech Conference](#) (1 of 300 accepted applicants)
2020 - [Google Queer Tech Voices Conference](#) (1 of 32 accepted out of hundreds of applicants)
2019 - [3rd Place Award for Best Hack @ Rose Hack](#), [Major League Hacking](#)
2018-2021 - [Dean’s Honors List](#)
2017 - [Siemens Competition Regional Finalist](#) (1 of 101 finalists selected from 4092 entrants)
2016 - [Award of Achievement](#), [Association for Computing Machinery, San Francisco Bay Area Professional Chapter](#)

Other Research Projects

Explaining Attention-Based Graph Neural Networks Post-Hoc With Attention Flows (2022)

Collaborators: Paymon Haddad, Brian Tagle, Yizhou Sun

Location: UCLA Scalable Analytics Institute

Description: We propose a simple mechanism based on attention flows, which are Shapley value explanations, to augment the post-hoc interpretability of attention-based graph representation learning models by identifying nodes in the input graph that contribute most to predictions.

Notes: [Report](#)

Selecting Core Subgraphs for Efficient Graph Neural Network Training (2021-2022)

Collaborators: Harsh Chobisa, Yizhou Sun, Baharan Mirzasoleiman

Location: UCLA Scalable Analytics Institute

Description: We developed algorithms to condense large networks into small, (possibly synthetic) graphs that, when used to train a graph neural network, can yield comparable test performance with more efficient training.

Notes: [Report](#), [Theoretical Analysis](#)

Expressive Graph Transformers (2020-2021)

Collaborators: Ziniu Hu, Yizhou Sun

Location: UCLA Scalable Analytics Institute

Description: I empirically and theoretically studied the effect of different types of handcrafted and [adaptive](#) relational information for relation-aware self-attention on improving the expressiveness and performance of graph Transformers, particularly on NP-hard graph problems. As part of this project, I [implemented](#) and trained a multi-GPU graph Transformer model using PyTorch.

Twitter Saliency Algorithm: Identifying Unintentional Harms to Gender Non-Conforming Individuals (2021)

Collaborators: Michael McKenna

Description: We attempted to uncover unintentional harms of the Twitter saliency algorithm, e.g. 1) identifies images of potentially-cis or binary-presenting individuals as more salient than those of gender non-conforming folks, 2) identifies undesirable secondary sex characteristics of gender non-conforming individuals that may trigger body dysphoria.

Notes: [Report](#)

Heterogeneous Graph Transformer (2020)

Collaborators: Ziniu Hu, Yizhou Sun

Location: UCLA Scalable Analytics Institute

Description: I adapted the implementation of the Heterogeneous Graph Transformer (HGT) to efficiently embed web-scale knowledge graphs (e.g. YAGO, DBpedia) for link prediction and ran R-GCN baselines. Additionally, I prepared an OGB leaderboard submission in which I applied HGT to the ogbl-ppa dataset.

Robust Model-Agnostic Meta-Learning for Binary Content Moderation Tasks in Natural Language Processing (2020)

Collaborators: John Dang, Kai-Wei Chang

Location: University of California, Los Angeles

Description: We investigated applying Model-Agnostic Meta-Learning (MAML) to boost performance on binary content moderation tasks in low-resource contexts. Using PyTorch, we compared the ability of a model pre-trained with MAML to adapt to unseen binary content moderation tasks to those of a model pre-trained using traditional transfer learning approaches and a model trained from scratch.

Notes: [Report](#)

MovieLens Recommender System (2019)

Collaborators: Amit Mondal, Bryan Chiang, John Dang, Jyun-Yu Jiang, Wei Wang

Location: University of California, Los Angeles

Description: We created a recommender system to predict the binary rating for 4M unseen UserID-MovieID pairs in the MovieLens dataset. We surveyed the performance of content-based (e.g. TF-IDF, genre-based decision tree, etc.) and collaborative filtering (e.g.

SVM, SVD, element-wise matrix factorization, tabular matrix factorization, hybrid matrix factorization, etc.) methods. Notes: [Report](#)

Service

Reviewing (2022-)

Description: I was/am a reviewer for: [LoG 2022](#), [FAccT 2022](#), [GLFrontiers @ NeurIPS 2022](#), [TSRML @ NeurIPS 2022](#), [TrustNLP @ NAACL 2022](#), [Challenges & Perspectives in Creating Large Language Models @ ACL 2022](#), [NAACL Student Research Workshop \(SRW\) 2022](#), [Workshop on Online Abuse and Harms @ NAACL 2022](#)

Affinity Workshops Chair, NeurIPS 2022 (2022)

Location: New Orleans, Louisiana

Description: I am serving as an [Affinity Workshops Chair](#) for [NeurIPS 2022](#).

Core Organizer, Queer in AI (2021-)

Location: Virtual

Description: I organize workshops and socials at AI conferences (e.g. [AAAI 2021](#), [ICML 2021](#), [NeurIPS 2021](#), [FAccT 2022](#), [NAACL 2022](#), [ICML 2022](#)), as well as the [undergraduate mentoring program](#), which gets junior queer and trans folks involved with AI research and aids them in [applying to graduate school](#). Additionally, I advise AI conferences on [diversity and inclusion and accessibility issues](#) and help shape [AI policy](#) as it concerns queer and trans communities. The work I do with Queer in AI has been featured by [500 Queer Scientists](#).

Accessibility Chair, NAACL 2022 (2021-2022)

Location: Seattle, Washington

Description: I am serving as an Accessibility Chair on [NAACL 2022's Diversity and Inclusion committee](#), ensuring in-person and digital accessibility for the conference. I authored guidelines on: [Publication Accessibility, Quality, and Inclusivity](#), [Poster and Talk Accessibility, Quality, and Inclusivity](#).

Queer and Trans in STEM Representative, UCLA Samueli Standing Committee on Diversity (2021-)

Location: University of California, Los Angeles

Description: I am working towards dropping the GRE requirement for graduate school admissions.

UCLA Engineering Scholarship Application Reviewer (2021)

AllenNLP Hacks Organizer, AllenNLP (2021)

Location: Seattle, Washington

Description: I helped organize [AllenNLP Hacks](#), a hackathon to connect with marginalized students, welcome them into AllenNLP's open-source community, bring their perspectives to AllenNLP's research, and encourage them to apply to intern and work with [AllenNLP](#).

Organizer, UCLA Computer Science Summer Institute (2021-2022)

Location: Los Angeles, California

Description: I have interviewed and recruited a diverse group of Undergraduate Tutors each year for the [UCLA Computer Science Summer Institute \(CSSI\)](#), to lead interactive coding and problem-solving sessions with the high school students.

Outreach Director, ACM AI at UCLA (2019-2021)

Location: Los Angeles, California

Description: I strive to make an [AI education](#) accessible to everyone. I created, led, and taught open-source, accessible [machine learning](#) and [AI ethics](#) classes at Title I schools in LA, through in-person visits, virtual sessions, and educational technology (e.g. [mean-squared error](#), [convolutional filters](#), [biases in machine learning](#), etc.) I also created and produced the "[You Belong in AI!](#)" podcast, which empowers marginalized youth to pursue AI opportunities through inspiring interviews with researchers. The podcast has been featured by the [Daily Bruin](#) and [UCLA Samueli Newsroom](#).

Co-Founder and Organizer, QWER Hacks (2019-2021)

Location: Los Angeles, California

Description: I co-founded and organized Major League Hacking's first-ever LGBTQIA+ event and the first student-run, collegiate [LGBTQIA+ hackathon](#) in the US. QWER Hacks has been featured by the [Daily Bruin](#) and the [UCLA Samueli Newsroom](#).

Undergraduate Learning Assistant (2018)

Location: Los Angeles, California

Description: I led weekly recitation sections of 20 students for the introductory computer science class (programming in C++), walking through practice problems and actively applying pedagogy techniques (e.g. open questioning, fostering belonging, etc.)

References

Yizhou Sun (yzsun@cs.ucla.edu)

Kai-Wei Chang (kwchang@cs.ucla.edu)

Aydogan Ozcan (ozcan@ucla.edu)