AMEL AWADELKARIM

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EDUCATION

Stanford University Sept 2017 - present
Ph.D. in Computational and Mathematical Engineering (expected 2023)
National Science Foundation (NSF) Graduate Research Fellow

The Pennsylvania State University Aug 2016 - Dec 2017
M.S. in Engineering Science & Mechanics - GPA: 4.0/4.0

The Pennsylvania State University Aug 2012 - Aug 2016
B.S. in Engineering Science - Major GPA: 3.82/4.0
Minor in Mathematics

WORK EXPERIENCE

Stanford University - Teaching Assistant Jan 2021 - Mar 2022

- Assisted instruction of MS&E 135: Networks—drafted and graded homework assignments, held weekly virtual office hours, engaged in class discussion forums, proctored and graded exams

Google - Software Engineering Internship Jun 2019 - Sept 2019

- Implemented Bayesian skill-rating system on Google Maps user reviews to acquire more accurate establishment scores across Google Maps.
- Analyzed quality of new metric against averaged 5-star ratings, finding new metric can capture quality signal that averaged 5-star ratings cannot.

TECHNICAL HIGHLIGHTS

Research Interests	Computational social science, personalization & recommender systems
Relevant Courses	Applied Statistics, Machine Learning, Discrete Math & Algorithms, Optimization, Numerical Linear Algebra
Computer Languages	Python, C++, LaTeX
Software & Tools	numpy, pandas, scipy, PyTorch, matplotlib, git, Jupyter Notebook

RESEARCH PROJECTS

Preference modeling for school choice Jan 2021 - present

- Applying recent advancements in discrete choice and ranking models to improve preference models for school choice research.
- Simulating and analyzing market effects of sending real-time notifications, or "nudges", to families with high non-placement risk.
- Evaluating using San Francisco Unified School District (SFUSD) preference data.

"Prioritized restreaming algorithms for balanced graph partitioning" May 2018 - Feb 2020

- Developed a new family of balanced graph-partitioners inspired by a taxonomy of existing methods.
- Empirically compared the new class of algorithms with a number of existing graph partitioning techniques, providing benchmarking that was previously void in the literature, and proposing our technique as superior in minimizing the edge-cut objective.

"Training a playlist curator based on user taste" Sept 2018 - Dec 2018

- Built a playlist classifier, mapping a list of unclassified songs to user-created playlists based on similarity, based on features like Spotify song metadata, latent artist embedding (learned from related-artists graph), and artist genre tags.
- Performed training, validation, and testing on various ML models, including neural network, SVMs, and perceptron.

PUBLICATIONS

- A Awadelkarim, I Ashlagi, I Lo, J Ugander. "Equilibrium analysis of smart-matching-platform interventions in school choice". (In preparation).
- A Awadelkarim, A Seshadri, I Ashlagi, I Lo, J Ugander. "Rank-heterogeneous preference modeling for school choice". (In preparation).
- A Awadelkarim, J Ugander. "Prioritized restreaming algorithms for balanced graph partitioning". Proc. 26th ACM SIGKDD Int'l Conf. on Knowledge Discovery and Data Mining (KDD), 2020.

PRESENTATIONS

- Poster presentation, "Improved preference modeling for school choice", International Conference on Computational Social Science (IC2S2), Jul 2022.
- Contributed talk, "Designing defaults for school choice", NeurIPS Workshop for Human and Machine Decisions (WHMD), Nov 2021. Recorded talk.
- Poster presentation, "Designing defaults for school choice", NeurIPS Workshop for Human and Machine Decisions (WHMD), Nov 2021.
- Oral and poster presentation, "Prioritized restreaming algorithms for balanced graph partitioning", International Conference on Knowledge Discovery and Data Mining (KDD), Jul 2020. Slides.
- Contributed talk, "Prioritized restreaming algorithms for balanced graph partitioning", SIAM Network Science (SIAMNS) Workshop, Jun 2020.
- Seminar talk, "Prioritized restreaming algorithms for balanced graph partitioning", Stanford Women in Math Mentoring Research Seminar, May 2020.

AWARDS

- NSF Graduate Research Fellowship (Fall 2017 - Summer 2020).
- Outstanding Undergraduate Thesis Award (Spring 2016).
- 1^{st} place at the Penn State Speaking & Presentation Contest (Fall 2015).

ACTIVITIES

Member - San Francisco Fury Jun 2018 - present

- Elite women's Ultimate frisbee club, based in the SF/East Bay area. National champions 2021, 2018.

Participant - Con10ent Tour Sept 2021 - Jun 2022

- Coordinated, fund-raised, traveled, and participated in a tour of all-Black Ultimate showcase games across the US to foster a sense of community amongst Black ultimate players, inspire local youth, and raise money for racial justice causes.

Coach - Stanford Women's Ultimate team Sept 2019 - Dec 2020

- Planned and ran weekly practices, attended 4 away tournaments over the course of the year.
- Awarded coaches of the year across the entire college division.