Matthew Faw

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Research Interests

Stochastic Optimization, Online Learning, Multi-Armed Bandits, Optimal Stopping

Education

2018–Present **Ph.D. in Electrical & Computer Engineering**, *The University of Texas at Austin*, Austin, TX.
Advisors: Sanjay Shakkottai, Constantine Caramanis.

2013–2017 **B.S.E. Electrical & Computer Engineering, B.S. Computer Science, A.B. Math**, *Duke University*, Durham, NC.
Advisors: Nick Buchler, Richard Fair, Benjamin C. Lee

Publications (Google Scholar)

Conference Papers

COLT 2023 "Beyond Uniform Smoothness: A Stopped Analysis of Adaptive SGD", **F**$^{=}$, L. Rout$^{=}$, C. Caramanis, S. Shakkottai

COLT 2022 "The Power of Adaptivity in SGD: Self-Tuning Step Sizes with Unbounded Gradients and Affine Variance", **F**$^{=}$, I. Tziotis$^{=}$, C. Caramanis, A. Mokhtari, S. Shakkottai, R. Ward

SIGMETRICS 2022 "Learning To Maximize Welfare with a Reusable Resource", **F**$^{=}$, O. Papadigenopoulos$^{=}$, C. Caramanis, S. Shakkottai

SODA 2022 "Single-Sample Prophet Inequalities via Greedy-Ordered Selection", C. Caramanis, P. Dütting, **F**, P. Lazos, S. Leonardi, O. Papadigenopoulos, E. Pountourakis, R. Reiffenhäuser (alphabetical order)

NeurIPS 2020 "Mix and Match: An Optimistic Tree-Search Approach for Learning Models from Mixture Distributions", **F**, R. Sen, K. Shanmugam, C. Caramanis, S. Shakkottai

Journal Papers

TOCS 2017 "Computational Sprinting: Architecture, Dynamics, and Strategies", S. Zahedi, S. Fan, **F**, E. Cole, B. Lee

Working Papers

"On Mitigating Unconscious Bias through Bandits with Evolving Biased Feedback", **F**, C. Caramanis, S. Shakkottai, J. Hoffmann

"Multi-source Domain Adaptation Under Sparsity Constraints", **F**, K. Shanmugam, C. Caramanis, S. Shakkottai

Awards + Honors

2023 Dr. Brooks Carlton Fowler Endowed Presidential Graduate Fellowship in Electrical and Computer Engineering from Cockrell School of Engineering for the 2023-2024 academic year

2022 Top 10% reviewer for NeurIPS'22 and AISTATS'22, Highlighted reviewer for ICLR 2022

2020 NXP Foundation Fellowship for the 2020-2021 academic year

2017 Cum Laude Graduation Honors, Duke University

2016 Member, Tau Beta Pi and Eta Kappa Nu Honor Societies, Duke University

2014 Gold medal, International Genetically Engineered Machine Competition

Selected Talks and Poster Presentations

Nov 2023 Asilomar 2023, Pacific Grove, CA *(Invited)*: "On Learning for Welfare Maximization with a Reusable Resource"

April 2023 IFML Workshop, UW "Beyond Uniform Smoothness: A Stopped Analysis of Adaptive SGD"

April 2022 Machine Learning Lab Research Symposium, UT Austin: "The Power of Adaptivity in SGD: Self-Tuning Step Sizes with Unbounded Gradients and Affine Variance"

January 2022 SODA 2022, Virtual: "Single Sample Prophet Inequalities via Greedy-Ordered Selection"

October 2022 Joint IFML/Data-Driven Decision Processes Workshop, Simons Institute, UC Berkeley (Poster): "The Power of Adaptivity in SGD: Self-Tuning Step Sizes with Unbounded Gradients and Affine Variance"

December 2020 NeurIPS 2020, (Virtual Poster), "Mix and Match: An Optimistic Tree-Search Approach for Learning Models from Mixture Distributions"

November 2019 Texas Wireless Summit, UT Austin (Poster): "Mix and Match: An Optimistic Tree-Search Approach for Learning Models from Mixture Distributions"

Conference Reviewing

AISTATS, ALT, ICLR, ICML, JMLR, NeurIPS

Industry Experience

June'17-July'18 **Software Engineer**, *Verato*, McLean, VA.

May-Aug 2016 **Software Engineering Intern, Stateflow Semantics**, *MathWorks*, Natick, MA.

Undergraduate Research Experience

Jan-Dec 2016 **Datacenter Architecture**, *Advisor: Dr. Benjamin Lee*, Duke University.

Jan-Dec 2015 **Microfluidics**, *Advisor: Dr. Richard Fair*, Duke University.

May-Nov 2014 **Synthetic Biology**, *Advisor: Dr. Nick Buchler*, Duke University.

Teaching Experience

UT Austin EE 460J Data Science Lab TA

Duke CS 308 Software Design and Implementation TA, ECE 280 Signals & Systems TA, Synthetic Biology House Course Co-Instructor

Graduate Coursework

UT Austin Probability & Stochastic Processes, Advanced Probability, Stochastic Processes I, Theoretical Statistics, Online Learning, Large Scale Optimization I & II, Combinatorial Optimization, Sublinear Algorithms, Markov Chains & Mixing Times, Combinatorics & Graph Theory, Analysis & Design of Communication Networks

Technical Skills

Programming Java, Python (PyTorch, Sklearn), C/C++, JavaScript

Infrastructure Kubernetes, AWS, Google Cloud, Mongo, Solr

References available upon request