Landon Butler

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Research Interests

My research examines the theoretical foundations of machine learning and algorithmic decision-making in complex systems, leveraging tools from game theory, network science, and economics. I have applied this work to the design of markets, the restructuring of airline route networks, and wireless communications.

Education

University of California, Berkeley
Ph.D. candidate in Electrical Engineering and Computer Science 2027
Advised by Prof. Kannan Ramchandran

University of Pennsylvania
M.S.E. in Data Science 2022
Thesis: Convolutional Learning on Multigraphs
Advised by Prof. Alejandro Ribeiro

University of Pennsylvania
B.S.E. in Systems Engineering 2022
Concentration: Artificial Intelligence and Data Science
Minors: Computer Science, Mathematics

Awards

Best Paper Award, *International Conference on Research in Air Transportation* 2022
Best Paper Award, *Andrew P. Sage Memorial Conference* 2022
Sidney Shore Award, *University of Pennsylvania* 2022
Norman Gross Engineering Prize, *University of Pennsylvania* 2022
Wolf Family Award in Systems Engineering, *University of Pennsylvania* 2021
Excellence in Student Support, *University of Pennsylvania* 2021

Fellowships

NSF Graduate Research Fellowship 2022
Littlejohn Fellowship, *University of Pennsylvania* 2021

Teaching

Teaching Assistant, *University of Pennsylvania ESE Department*

- Statistics for Data Science, Spring 2021, Summer 2021
- Graph Neural Networks, Fall 2021
- Foundations of Data Science, Fall 2021

Internships

Software Engineering Intern at Strivr, Summer 2020
Developed encryption architecture for end-to-end protection of telemetry data

Electrical Engineering Intern at Kiewit, Summer 2016, 2017, 2018, 2019
Designed plant circuitry across seven power generation projects

Publications

Preprints

1. *Learning with Multigraph Convolutional Filters*
   arXiv:2210.16272, 2022
   Submitted to IEEE International Conference on Acoustics, Speech and Signal Processing
   Landon Butler, Alejandro Parada-Mayorga, and Alejandro Ribeiro
2. *Convolutional Learning on Multigraphs*
   arXiv:2209.11354, 2022
   Submitted to IEEE Transactions on Signal Processing
   Landon Butler, Alejandro Parada-Mayorga, and Alejandro Ribeiro
3. *Convolutional Filtering and Neural Networks with Non-Commutative Algebras*
   arXiv:2108.09923, 2022
   Submitted to IEEE Transactions on Signal Processing
   Alejandro Parada-Mayorga, Landon Butler, and Alejandro Ribeiro

Conference Papers

1. *Equitable Optimization of U.S. Airline Route Networks*
   Andrew P. Sage Memorial Conference, 2022
   Arnav Joshi, Andy Eskenazi, Landon Butler, and Megan Ryerson
2. *Democratizing Aviation Emissions Estimation: Development of an Open-Source, Data-Driven Methodology*
   International Conference on Research in Air Transportation (ICRAT), 2022
   Andy Eskenazi, Landon Butler, Arnav Joshi, and Megan Ryerson
3. *Learning Connectivity for Data Distribution in Robot Teams*
   IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021
   Ekaterina Tolstaya, Landon Butler, Daniel Mox, James Paulos, Vijay Kumar, and Alejandro Ribeiro