

# Emily Diana

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## Education

- 2018-** PhD Student in Statistics - The Wharton School, University of Pennsylvania  
Adviser: Michael Kearns
- 2017-2018** M.S. in Statistics - Stanford University
- 2011-2015** B.A. in Applied Mathematics, cum laude - Yale College  
Thesis: *Maintaining Bipartite Structure with a Modified Louvain Algorithm*  
Supervisor: Daniel Spielman

## Publications

1. Emily Diana, Wesley Gill, Ira Globus-Harris, Michael Kearns, Aaron Roth, and Saeed Sharifi-Malvajerdi. Lexicographically fair learning: Algorithms and generalization. 2021. Under Reivew
2. Emily Diana, Wesley Gill, Michael Kearns, Krishnaram Kenthapadi, and Aaron Roth. Convergent algorithms for (relaxed) minimax fairness. 2020. Under Reivew
3. Emily Diana, Travis Dick, Hadi Elzayn, Michael Kearns, Aaron Roth, Zachary Schutzman, Saeed Sharifi-Malvajerdi, and Juba Ziani. Algorithms and learning for fair portfolio design. Under Reivew
4. Emily Diana, Hadi Elzayn, Michael Kearns, Aaron Roth, Saeed Sharifi-Malvajerdi, and Juba Ziani. Differentially private call auctions and market impact. *In the Twenty-First ACM Conference on Economics and Computation*, February 2020. arXiv:2002.05699 cs.GT
5. Emily Diana, Michael Kearns, Seth Neel, and Aaron Roth. Optimal, truthful, and private securities lending. *In 2020 ACM International Conference on AI in Finance*, October 2020. arXiv:1912.06202 [cs, q-fin]
6. Charles R. Noble et al. Ale3d: An arbitrary lagrangian-eulerian multi-physics code. Technical Report LLNL-TR-732040, Lawrence Livermore National Lab. (LLNL), Livermore, CA (United States), May 2017

## Conference Presentations

1. *ALT Mentorship Workshop* “Minimax and Lexicographically Fair Learning: Algorithms, Experiments, and Generalization.” 2021. (Talk Dissection)
2. *AMLC Workshop on Fairness and Bias in AI*. “Convergent Algorithms for (Relaxed) Minimax Fairness.” 2020. (Talk)
3. *6th Annual Bloomberg-Columbia Machine Learning in Finance*. “Optimal, truthful, and private securities lending.” 2020. (Talk)

4. *Joint Statistical Meetings, Philadelphia, PA.* “Is Anemia Prevalence a Good Proxy for Malaria Prevalence for Children? A Community-Level Perspective via Matched Logistic Regression.” 2020. (Talk)
5. *NeuRIPS Workshop on Robust AI in Financial Services: Data, Fairness, Explainability, Trustworthiness, and Privacy, Vancouver, CA.* “Optimal, truthful, and private securities lending.” 2019. (Spotlight Talk)
6. *Grace Hopper Celebration of Women in Computing, Houston, TX.* “Domain Decomposition with Recursive Inertial Bisection.” 2016. (Poster)
7. *Yale Day of Data, New Haven, CT.* “Partitioning Bipartite Graphs: A Modified Louvain.” 2015. (Poster)
8. *Joint Mathematics Meetings, Baltimore, MD.* “Random Walks on Spheres and Harmonic Functions.” 2014. (Poster)

## Teaching Assistantships

### The Wharton School, University of Pennsylvania

CIS 399: Science of Data Ethics (Spring 2020)

STAT 613: Regression Analysis for Business (Fall 2019)

STAT 102: Introduction to Business Statistics (Spring 2019)

### Stanford University

CS 161: Design and Analysis of Algorithms (Winter 2018-2019)

CS 106A: Programming Methodologies (Fall 2018)

## Professional Experience

**Jun 2020 -** Amazon Web Services (Remote)

*Applied Scientist Intern*

Supervisors: Michael Kearns and Krishnaram Kenthapadi

Research Topic: Minmax Fairness: Framework and Algorithms.

Language: Python

Time Commitment: Full time through September 18th. Flex hours as needed (to continue collaboration) currently.

**Mar 2017 -** Center on Poverty and Inequality, Stanford University, Stanford, CA

**Aug 2018** *Research Assistant*

Supervisors: David Grusky and Adrian Raftery

Research Topic: Developing methodologies to analyze trends in contemporary social mobility based on contingency tables of longitudinally-linked Census data (ongoing project).

Language: R

**Aug 2015-** Lawrence Livermore National Laboratory, Livermore, CA

**Sep 2017** *Scientific Software Developer*

Parallelized and integrated a domain decomposer, Recursive Inertial Bisection, into the mesh generation step of ALE3D, a multi-physics “Arbitrary Lagrangian-Eulerian 3D” numerical simulation code. Primary developer for LLNL’s ParticlePack code. Member of team integrating a GPU portability abstraction into ALE3D’s advection package. Presented research internally on implications of strided memory access patterns on GPU-accelerated computing.

Languages: C++, Python

Packages: MPI, CUDA, TotalView, ViSit, GDB

**Jun 2014 -** Lawrence Livermore National Laboratory, Livermore, CA  
**Aug 2014** *Cybersecurity Intern*  
Poster: *Partitioning Bipartite Graphs: A Modified Louvain*  
Language: MATLAB

**May 2013 -** Summer Undergraduate Research Institute in Experimental Mathematics, East Lansing, MI  
**Jul 2013** *Undergraduate Summer Researcher, Michigan State University*  
Manuscript: *Random Walks on Spheres and Harmonic Functions*  
Language: MATLAB

## Coding Skills

■ Proficient	■ Familiarity	■ Everyday Workflow	■ Work Experience
C/C++	SQL	LaTeX	MPI
Haskell	Java	Git	TotalView
R	Scheme	Bash	VisIt
Python			GDB
MATLAB			

## Service

FORC External Reviewer (2021)

Wharton Doctoral Program Peer Mentor (2020)

Stanford Women in Mathematics Mentoring (2017)

LLNL Division Representative for Girls Who Code (2016-2017)

## Awards

Wellcome Data Re-Use Prize: Malaria (£15000, 2019)

Weapons Simulation and Computing Code Development Silver Star Award (2017)

## References

Available upon request