Emily Diana

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Education

2018- PhD Student in Statistics - The Wharton School, University of Pennsylvania

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, Michael Kearns, Seth Neel, and Aaron Roth. Optimal, truthful, and private securities lending. *In NeurIPS 2019 Workshop on Robust AI in Financial Services: Data, Fairness, Explainability, Trustworthiness, and Privacy*, December 2019. arXiv:1912.06202 [cs, q-fin]
2. 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. *NeuRIPS Workshop on Robust AI in Financial Services: Data, Fairness, Explainability, Trustworthiness, and Privacy, Vancouver, CA.* “Optimal, truthful, and private securtiies lending.” 2019. (Spotlight Talk)
2. *Grace Hopper Celebration of Women in Computing, Houston, TX.* “Domain Decomposition with Recursive Inertial Bisection.” 2016. (Poster)
3. *Yale Day of Data, New Haven, CT.* “Partitioning Bipartite Graphs: A Modified Louvain.” 2015. (Poster)
4. *Joint Mathematics Meetings, Baltimore, MD.* “Random Walks on Spheres and Harmonic Functions.” 2014. (Poster)

Teaching Assistantships

The Wharton School, University of Pennsylvania

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

Mar 2017 - Aug 2018 Center on Poverty and Inequality, Stanford University, Stanford, CA
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- Sep 2017 Lawrence Livermore National Laboratory, Livermore, CA
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 - Aug 2014 Lawrence Livermore National Laboratory, Livermore, CA
Cybersecurity Intern

Poster: *Partitioning Bipartite Graphs: A Modified Louvain*

Language: MATLAB

May 2013 - Jul 2013 Summer Undergraduate Research Institute in Experimental Mathematics, East Lansing, MI
Undergraduate Summer Researcher, Michigan State University

Manuscript: *Random Walks on Spheres and Harmonic Functions*

Language: MATLAB

Coding Skills

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

Service

Stanford Women in Mathematics Mentoring (2017)

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

Awards

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

  Document Title: *Rethinking the Causal Relationship between Malaria and Anemia for African Children: A Community-Level Perspective via Two-Step Matching Adjustment*

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

  Award Text: *Members of the ARES and ALE3D code teams worked together to restructure and optimize hydrodynamics physics algorithms in a portable but performant manner for the heterogeneous GPU based Sierra computing architecture. Initial ports of the hydrodynamics algorithms showed performance 100X slower than a standard CPU, but diligence and clever insight into how the GPUs operated eventually resulted in speedups more than 5X faster than a standard CPU. The performance gain realized in their work has opened the possibility of 3D ensemble evaluations for the first time.*

References

Available upon request