

Caleb Levy

Data Science Researcher

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Education

- 2015-2019 **Princeton University**, Ph.D. in Applied Mathematics.
- 2010-2014 **UC Berkeley**, B.A. in Applied Mathematics and Astrophysics.

Positions

- 2019-Present **UC Santa Cruz**, *Postdoctoral Researcher*, Santa Cruz, CA.
 - Investigating methods for generating low-dimensional embeddings of social network graphs
 - Improving fairness of ML classifiers by finding data attributes that leak protected information
- 2015-2019 **Princeton University**, *Graduate Researcher*, Princeton, NJ.
 - Created new mathematical techniques for analyzing binary search tree data structures
- 2017-2019 **Intertrust Technologies**, *Consultant*, Sunnyvale, CA.
 - Developed products that use blockchain technologies to track data provenance and authenticity
 - Drafted patents related to identity management and certification
- 2018 **Microsoft Research**, *Consulting Researcher*, New York, NY.
 - Designed workload-adaptive algorithms for increasing database performance
- 2017 **Intertrust Technologies**, *Intern*, Sunnyvale, CA.
 - Rewrote Spark code for processing large graphs, doubling application performance
- 2016 **Bell Labs**, *Intern*, Murray Hill, NJ.
 - Constructed neural networks in Tensorflow for extracting figures from scanned documents
- 2014 **Los Alamos National Labs**, *Intern*, Los Alamos, NM.
 - Built software for making 3D animated visualizations of particle interactions with Blender
- 2011-2013 **UC Berkeley**, *Research Assistant*, Berkeley, CA.
 - Managed computer simulations run on NASA's high performance computers
 - Assisted with research into energy propagation in protoplanetary disks

Publications

- 2020 Yang Liu, Jialu Wang, Caleb Levy, "Fair Classification with Group-Dependent Label Noise," Submitted to: *International Conference on Machine Learning (ICML)*.
- 2019 Caleb Levy and Robert Tarjan, "Splaying Pattern-Avoiding Permutations," *Workshop on Algorithms and Data Structures (WADS)*.
- 2018 Robert Tarjan, Caleb Levy, Stephen Timmel, "Zip Trees," For submission to *Workshop on Algorithms and Data Structures (WADS)*.
- 2019 Caleb Levy and Robert Tarjan, "A New Path from Splay to Dynamic Optimality," *Symposium on Discrete Algorithms (SODA)*.
- 2017 Chun-Nam Yu, Caleb Levy, Iraj Saniee, "Convolutional Neural Networks for Figure Extraction in Historical Technical Documents," *International Conference on Document Analysis and Recognition (ICDAR)*.

Patents

- 2018 Caleb Levy, “Cryptographic Systems and Methods Using Distributed Ledgers,” *Provisional US Patent Filing*.

Technical Reports

- 2014 Caleb Levy, James Schloss, Jerome Daligault, “Simulation and Visualization of Particle Transport in Strongly Coupled Plasmas,” *Final Reports from the LANL Computational Physics Student Summer Workshop*.

Talks

- 2019 *Splaying Preorders and Postorders*
- Workshop on Algorithms and Data Structures, Edmonton CA (2019)
- 2018-2019 *Zip Trees*
- Workshop on Algorithms and Data Structures, Edmonton CA (2019)
- Highlights of Algorithms, Amsterdam NL (2018)
- 2018-2019 *A New Path from Splay to Dynamic Optimality*
- Princeton University, Theory CS Seminar, Princeton NJ (2019)
- Symposium on Discrete Algorithms, San Diego CA (2019)
- Carnegie Mellon University, Applied Math Seminar, Pittsburg PA (2018)

Workshops (Includes Planned)

- 2019 Neural Information Processing Systems, *Vancouver BC*
- 2019 ADSI Workshop on Algorithmic Foundations of Learning and Control, *Seattle WA*
- 2019 ADSI Summer School on Foundations of Data Science, *Seattle WA*
- 2017 Hawaii Workshop on Parallel Algorithms and Data Structures, *Honolulu HA*
- 2017 Heidelberg Laureate Forum, *Heidelberg DE*

Teaching Experience

- 2017, 2019 Advanced Algorithms and Data Structures (Assistant Instructor)
- 2016 Introduction to Multi-Variable Calculus (Assistant Instructor)