Eric Lybrand

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Education

University of California, San Diego — **San Diego, CA**
Ph.D.Candidate in Mathematics - Advised by Rayan Saab — *2015–2020*

University of Georgia — **Athens, GA**
B.Sc. Mathematics — *2011–2015*

Previous Employment

University of California, San Diego — **San Diego, CA**
Academic Student Employee — *2015–Present*

Senior Teaching Assistant — *2018-2019*
- Co-organized math department orientation for incoming graduate students.
- Restructured and revitalized a mentor program for 43 new PhD students which paired senior graduate students with incoming students.
- Restructured department TA training from 6 voluntary meetings to 10 mandatory weekly meetings in the Fall quarter. Designed a new cirriculum with Graduate Vice Chair and senior faculty.
- Co-taught department TA training with senior faculty for 73 math TAs, the largest incoming class of first time TAs.
- Observed discussion sections of 63 math TAs.
- Served on Graduate Affairs committee, a committee responsible for managing all matters related to graduate students in the math department.

Graduate Teaching Assistant — *2015-2018*
- Integral Calculus, Differential Calculus, Honors Multivariable Mathematics with Manifolds, Linear Algebra, Vector Calculus.

Junior Teaching Assistant — *2017-2018*
- Helped perform observations of 60 math TAs, the largest incoming class of first time TAs at the time.
- Served on Graduate Affairs committee.
- Organized math department open house for 40 prospective students.
- Helped launch a mentor program for 36 new PhD students.

CURE Graduate Research Assistant — *Summer 2017*
- Served as research mentor for 6 UCSD undergraduates on a NSF funded random matrix theory project. Researched empirical spectral distributions of matrices with independent diagonals.

Graduate Student Researcher — *Summer 2016*
- NSF funded research in compressed sensing for extreme points of free spectrahedra under the guidance of Bill Helton.

IPAM & NEC Corporation — **Sendai, Japan**
Graduate Student Researcher — *Summer 2018*
- Project manager for a team of 6 American and Japanese researchers.
- Designed a new path-loss model for indoor localization using wireless received signal strength. Improved localization error by 1m in some cases. See blog post.

Technical Skills

Programming Languages/Software
Proficient: SQL, Python, pandas, Matlab, Mathematica, LaTeX
Some Experience: C++, C, Java
Other: Proficient Spanish speaker.

Professional Activities

UCSD Graduate Student Association *2017-2018*
Finance Committee

Reviewer
SampTA *2019*
Advances in Computational Mathematics *2018*
IEEE Statistical Signal Processing Workshop *2018*

Awards and Honors

UCSD Math Department Annual TA Award *2018*
UCSD Senate Research Grant *Spring 2017*
James B. Ax Graduate Fellowship *2015-2016*
Coursera Machine Learning Statement of Accomplishment *2015*
Presidential Scholar *2014-2015*
Eagle Scout *2008*

Presentations

One-Bit Compressed Sensing on Manifolds TRIPODS Summer Conference *May 2019*
Quantization and Low Rank Matrix Recovery UCSD HDSI Symposium *January 2019*
Quantization and Low Rank Matrix Recovery BIRS - Banff, Alberta, Canada *October 2018*
Compressed Sensing and Blind Deconvolution. IPAM GRIPS - Sendai, Japan *June 2018*
Poster Presentation. UCSD Mathematics Colloquium *May 2018*
Poster Presentation. Seventh International Conference on Computational Harmonic Analysis *May 2018*
Compressed Sensing and Random Matrices. UCSD Graduate Student Seminar *January 2018*
Deterministic Models for Topoisomerase II. UCSD Graduate Student Seminar *February 2017*
An Introduction to the Calculus of Variations. UGA Undergraduate Student Seminar *April 2014*
Understanding Topology via Differential Forms. UGA Undergraduate Student Seminar *January 2014*

Publications

[1] H. Huang, T. Kemp, Y. Ling, X. Luo, E. Lybrand, R. Smith, and J. Wang. Random Matrices with Independent Diagonals. *preprint*.

[2] M. Iwen, E. Lybrand, A. Nelson, and R. Saab. New Algorithms and Improved Guarantees for One-Bit Compressed Sensing on Manifolds. *preprint*, 2019.

[3] E. Lybrand and R. Saab. Quantization for Low-Rank Matrix Recovery. *Information and Inference*, 2018.