Eric Lybrand

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Education

University of California, San Diego — **San Diego, CA**
Ph.D. in Mathematics — *2015–2021*

University of Georgia — **Athens, GA**
B.Sc. in Mathematics (Summa Cum Laude) — *2011–2015*

Previous Employment

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

Voytek Lab Research Assistant — *Summer 2020*

· Performed technical audit and added aperiodic simulations to python package NeuroDSP.

Senior Teaching Assistant — *2017-20*

· Restructured department TA training with Graduate Vice Chair and senior faculty.

· First Senior TA to serve for two consecutive years. Trained largest incoming TA class in department's history.

· See my TA evaluations here.

CURE Graduate Research Assistant — *Summer 2017*

· Mentored 6 UCSD undergraduates from under-represented backgrounds on a NSF funded project.

Brex — **San Francisco, CA**
Data Science Intern — *Summer 2019*

· Engineered first generation of machine learning infrastructure for fraud model from scratch.

· Built and productionized Brex's first ever transaction level fraud detection model.

· Model had average precision that was 3x higher than Mastercard's model for transactions from last 30 days.

IPAM & NEC Corporation — **Sendai, Japan**
Graduate Student Researcher — *Summer 2018*

· Worked for the telecommunications corporation NEC on a project that focused on indoor localization using wireless networks.

· Led a team of 6 Japanese and American researchers in designing a new path loss model for indoor localization using wireless received signal strength - resulted in improved localization error by 1m in several cases.

Publications

[1] E. Lybrand, A. Ma, and R. Saab. "On the Number of Faces and Radii of Cells Induced by Gaussian Spherical Tessellations". In: *preprint* (2020).

[2] E. Lybrand and R. Saab. "A Greedy Algorithm for Quantizing Neural Networks". In: *preprint* (2020).

[3] M. Iwen, E. Lybrand, A. Nelson, and R. Saab. "New Algorithms and Improved Guarantees for One-Bit Compressed Sensing on Manifolds". In: *Sampling Theory and Applications* (2019).

[4] H. Huang, T. Kemp, Y. Ling, X. Luo, E. Lybrand, R. Smith, and J. Wang. "Random Matrices with Independent Diagonals". In: *preprint* (2018).

[5] E. Lybrand and R. Saab. "Quantization for Low-Rank Matrix Recovery". In: *Information and Inference* (2018).

Selected Talks

Quantization of Neural Networks Ph.D. Defense — *February 2021*

One-Bit Compressed Sensing on Manifolds TRIPODS Summer Conference - Tucson, Arizona — *May 2019*

Quantization for Low Rank Matrix Recovery BIRS - Banff, Alberta, Canada — *October 2018*

Selected Awards and Honors

Oceanids Memorial Fellowship — *2019*

UCSD Math Department Annual TA Award — *2018*

Eagle Scout — *2008*

Technical Skills

Programming Languages: Python, SQL, MATLAB, Mathematica, C++ (prior experience), R (prior experience)
Tools/Packages: pandas, Keras, numpy, scikit-learn, Git, Docker, Airflow, S3