Lizzy Coda

Education

University of California, San Diego
September 2022 - Present (Expected graduation June 2027)
PhD Candidate in Mathematics with Specialization in Statistics

University of California, Berkeley
August 2016 - May 2020
Bachelor's Degree, Applied Mathematics with emphasis in Statistics
Bachelor's Degree, Physics

Research Experience

University of California, San Diego — La Jolla, CA
Graduate Student — September 2022 - Present

- Research on theoretical foundations of clustering, clustering on graph data, theoretical foundations of embedding, and dimensionality reduction techniques with applications to real-world data.

Pacific Northwest National Lab — Seattle, WA
Data Scientist — August 2020 - September 2022
Summer 2023 & 2024

- Worked on various deep learning problems with applications including computer vision, materials science, molecular property prediction, and radio frequency data.

Environmental Systems Dynamics Laboratory — Berkeley, CA
Undergraduate Researcher — September 2019 - August 2020

- Performed large scale data cleaning and synthesis to develop the CHOSEN (Comprehensive Hydrologic Observatory Sensor Network) dataset.
- Employed information theory to quantify interactions between hydrometeorological variables and streamflow.

Papers

E. Coda, E. Arias-Castro, and G. Mishne. 2025. Cluster and then embed : a modular approach for visualization. *Paper submitted to Bioinformatics.*

Kvinge, H., **E. Coda**, E. Yeats, D. Brown, J. Buckheit, S. Scullen, B. Kennedy, L. Truong, W. Kay, C. Joslyn, T. Emerson, M. Henry, J. Emanuello. 2025. Probing the limits of mathematical world models in LLMs. *ICML 2025 Workshop on Assessing World Models.*

E. Arias-Castro and **E. Coda**. 2025. An axiomatic definition of hierarchical clustering. *Journal of Machine Learning Research.*

E. Arias-Castro, **E. Coda**, and W. Qiao. 2024. Graph Max Shift : A hill-climbing method for graph clustering. *Paper submitted to Latin American Journal of Probability and Mathematical Statistics.*

E. Coda, B. Clymer, C. DeSmet, Y. Watkins, and M. Girard. 2024. Universal Fourier attack for time series. *IEEE Open Journal of Signal Processing.*

T. Yin, G. Panapitiya, **E. Coda**, and E. Saldanha. 2023. Evaluating uncertainty-based active learning for accelerating the generalization of molecular property prediction. *Journal of Cheminformatics.*

E. Coda, G. Panapitiya, and E. Saldanha. 2023. Impacts of data and models on unsupervised pretraining to support molecular property prediction. *Neurips Workshop on AI for Accelerated Materials Design.*

Tipton, C., **E. Coda**, D. Brown, A. Bittner, J. Lee, G. Jorgenson, T.Emerson, and H. Kvinge. 2023. Haldane Bundles : A dataset for learning to predict the Chern number of line bundles on the torus. *Neurips Workshop on Symmetry and Geometry in Neural Representations.*

Setzler, M., **E. Coda**, J. Rounds, M. Vann, and M. Girard. 2022. Deep learning for spectral filling in radio frequency applications. *Sensor Signal Processing for Defense Conference.*

E. Coda, N. Courts, L. Truong, C. Wight, W. Choi, C. Godfrey, T. Emerson, K. Kappagantula, and H. Kvinge. 2022. Fiber Bundle Morphisms as a framework for modeling many-to-many maps. *ICLR Workshop on Geometrical and Topological Representation Learning.*

Truong, L, W. Choi, C. Wight, **E. Coda**, T. Emerson, K. Kappagantula, and H. Kvinge. 2022. Differential property prediction : A machine learning approach to experimental design in advanced manufacturing. *AAAI AI for Design and Manufacturing Workshop.*

Zhang, L., E. Moges, J. Kirchner, **E. Coda**, T. Liu, A. Wymore, Z. Xu, and L. Larsen. 2021. CHOSEN : A synthesis of hydrometeorological data from 30 intensively monitored watersheds across the US. *Hydrological Processes.*

Presentations

How do LLMs Perform Arithmetic and Why Do They Make Mistakes ? Presented talk at JMM Session on Mathematical Frontiers of Data Science for National Security, January 2025.

Deep Learning for Spectral Filling in Radio Frequency Applications. Presented talk at Sensor Signal Processing for Defence Conference, September 2022.

Modeling Many-to-Many Maps. Presented talk at The Pacific Northwest Seminar on Topology, Algebra, and Geometry in Data Science at University of Washington, April 2022.

Robust Adversarial Ensembles. Presented talk at Pacific Northwest National Lab, January 2021.

Synchronous and Cross Scale Hydrometerlogical Controls over Streamflow. Presented talk at American Geophysical Union Conference, December 2020.

Single Molecule Spectroscopy on Semiconductor Nanocrystals. Presented poster at UC Berkeley Summer Undergraduate Research Conference, August 2018.

Awards

Sloan Scholar Fellowship September 2022
Awarded to twelve incoming UCSD graduate students in the physical sciences and engineering based on strong academic achievement and a demonstrated commitment to diversity and inclusion in STEM.

James B. Ax Fellowship September 2022
Awarded by the UCSD math department to incoming PhD students.

Percy Lionel Davis Award for Excellence in Scholarship in Mathematics May 2020
Awarded by the UC Berkeley math department to seniors who have demonstrated excellent scholarship in mathematics.

Koret Research Scholarship June 2020
Scholarship awarded to fund summer participation in research.

Isidore Pomerantz Endowment Award November 2019
Awarded by the UC Berkeley physics department based on academic standing and progress in the physics major.

Quantedge Award for Academic Excellence November 2019
Awarded to UC Berkeley students of senior standing with a 4.0 GPA.

Bernard Fries Memorial Scholarship Fund Award November 2018
Awarded by the UC Berkeley physics department based on academic standing and progress in the physics major.

Summer Undergraduate Research Fellowship May 2018
Scholarship awarded to fund summer participation in research.

Regents and Chancellor's Scholarship September 2016
The most prestigious scholarship awarded to incoming Berkeley undergraduates selected for creativity, leadership, and service.

Teaching Experience

University of California, San Diego

Calculus-Based Introductory Probability and Statistics (Math 11)	Spring 2023, Winter 2024
Linear Algebra (Math 18)	Fall 2022
Introduction to Numerical Analysis (Math 170A)	Winter 2025
Introduction to Probability (Math 180A)	Fall 2025
Statistical Methods (Math 183)	Fall 2023, Fall 2024, Spring 2025
Introduction to Computational Statistics (Math 185)	Spring 2024
Exploratory Data Analysis and Inference (Math 189)	Winter 2023, Summer 2025
Applied Statistics (Math 282B)	Winter 2024, Winter 2025

University of California, Berkeley
Probability for Data Science (Statistics 140) — Fall 2019, Spring 2020

Service

Association of Women in Mathematics
- Events Coordinator — September 2022 - September 2023
- Secretary — September 2023 - September 2024
- Vice President — September 2025 - Present

Volunteer at Bay Area Science in Schools — January 2018 - May 2020
Volunteer at Expanding Your Horizons Conference — March 2017, March 2020
Society of Women in Physical Sciences Coordinator — Fall 2017 - Spring 2018

Skills

Python (PyTorch, Pandas, SkLearn), R (Tidyverse), Git, Java, CUDA