Kevin **Miller**

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EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES

PhD Mathematics
Jun 2022 | Los Angeles, CA
Advisor: Dr. Andrea L. Bertozzi
Research Focus: Active Learning in Graph-Based Semi-Supervised Learning
Cum. GPA: 3.92 / 4.0
Awards:

- DoD NDSEG Research Fellowship (Fall 2019-Spring 2022)
- NSF NRT Graduate Research Fellowship (Fall 2018-Spring 2019)

BRIGHAM YOUNG UNIVERSITY, PROVO

BS in Applied and Computational Mathematics
Apr 2017 | Provo, UT
Cum. GPA: 3.96 / 4.0
Awards: Magna Cum Laude, 4-year Full-Tuition Academic Scholarship

COURSEWORK

GRADUATE

Mathematical Machine Learning
Statistical Machine Learning
Optimization for Large-Scale Systems
Math. Aspects of Scientific Computing
Stochastic Processes
Monte Carlo Methods for Optimization
Numerical Analysis
Calculus of Variations
Applied Differential Equations

UNDERGRADUATE

Computation & Optimization (1,2)
Modeling with Uncertainty & Data (1,2)
Data Structures (C++)
Numerical Methods for Linear Algebra

PROGRAMMING SKILLS

Most Experience:
Python • SKLearn
Significant Experience:
MATLAB • PyTorch • LaTeX
Familiar With:
MLFlow • Tensorflow • C++

RESEARCH EXPERIENCE

UCLA MATHEMATICS | Graduate Research Fellow

Aug 2018 - Present | Los Angeles, CA

- Independently developed novel active learning acquisition function to efficiently leverage similarity graph structure and labeling information in Bayesian statistical framework [1]
- Application focus on human-in-the-loop ground-truth labeling for hyperspectral imagery and body-worn video datasets

UCLA REUCAM | Graduate Student Researcher

(**R***esearch* **E***xperience for* **U***ndergrads in* **C***omputational and* **A***pplied* **M***ath)*
Summer 2018 | Los Angeles, CA

- Conducted research in template matching in large-scale multichannel networks under Dr. Andrea Bertozzi for DARPA applications
- Adapted GraphSAGE node embedding to fit application-specific need
- Group's method significantly outperformed other academic groups' methods on desired task

Summer 2016 | Los Angeles, CA

- Developed novel method for semi-supervised classification of pixels in hyperspectral images under Dr.'s Andrea Bertozzi and Stanley Osher
- Optimized group's MATLAB code with substantial speed ups
- Published results in IEEE ICASSP 2017 [3]

BYU MATHEMATICS | Undergraduate Researcher

Sep 2015 – Jun 2017 | Provo, UT

- Applied random forests in deep learning framework [4] and explored probabilistic perspective of link prediction with Dr. Jeffrey Humpherys
- Led undergraduate participation and presentation of research topics

LAWRENCE LIVERMORE NATIONAL LABORATORIES | Computational Science Intern

May 2015 – Aug 2015 | Livermore, CA

- Designed and performed testing in Python of traditional clustering algorithms for identifying directed cyclic community structures
- Wrote technical report summarizing results and presented in Student Intern Poster Symposium July 28, 2015

PUBLICATIONS & PREPRINTS

[1] Kevin Miller, Hao Li, and Andrea L. Bertozzi. Efficient graph-based active learning with probit likelihood via gaussian approximations, 2020. ICML Workshop on Real World Experiment Design and Active Learning 2020.

[2] Andrea L. Bertozzi, Bamdad Hosseini, Hao Li, Kevin Miller, and Andrew M. Stuart. Posterior consistency of semi-supervised regression on graphs, 2020. Submitted to SIAM Journal of Mathematics of Data Science.

[3] V. Chayes, K. Miller, R. Bhalerao, J. Luo, W. Zhu, A. L. Bertozzi, W. Liao, and S. Osher. Pre-processing and classification of hyperspectral imagery via selective inpainting. In *2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 6195–6199, 2017.

[4] K. Miller, C. Hettinger, J. Humpherys, T. Jarvis, and D. Kartchner. Forward thinking: Building deep random forests, 2017. (arXiv Preprint).