

Elizabeth M. Hou

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<http://lizardintelligence.net>

Education

University of Michigan, Ann Arbor

Ph.D. Electrical Engineering and Computer Science

Advisor: Alfred O. Hero

M.A. Statistics

University of California, Berkeley

B.A. Statistics

Ann Arbor, MI

Expected June 2019

May 2015

Berkeley, CA

May 2012

Research Interests

Sequential / Online Learning, Optimization in Bayesian Models, Anomaly Detection, Latent Variable Modeling

Programming Languages

MATLAB, Python, R, C/C++, SQL, CUDA/OpenCL, OpenMP, VBA, Bloomberg

Work and Research Experience

Los Alamos National Labs

Graduate Research Associate

Los Alamos, NM

Summers (2015 - 2018)

- Developed a penalized ensemble Kalman Filter for high-dimensional non-linear systems with applications to real space weather data
- Developed a variational method for fast approximation of posteriors (compared to MCMC sampling)

University of Michigan

Consortium for Verification Technology Fellow

Ann Arbor, MI

Aug 2014-Present

- Developing sequential and anomaly detection models with applications to nuclear nonproliferation

Research Assistant

July 2014–April 2015

- Data and time series analysis on sentiment from Twitter data and Survey of Consumers archive

Graduate Student Instructor

Sept 2013-May 2014

- Prepared, taught, and held office hours for two lab sections (per semester) of Stats 250: Introduction to Statistics

Gifford Fong Associates

Quantitative Financial Analyst

Lafayette, CA

Mar 2012 – Jun 2013

- Performed valuations of structured products, bonds (corp, muni, gov), callable swaps, index-linked and currency-linked notes, bonds with exotic options, and auction-rate preferred securities
- Handled client phone calls and emails from major banks about pricing and explained of model methodology
- Researched and implemented models: to adjust spreads to for tranche-ing in MBS, price callable corporate bonds from non-callable bonds, for default probabilities, liquidity measures for CDOs and other illiquid securities

University of California, San Francisco

Computational Research Assistant

San Francisco, CA

Jun 2011-Nov 2011

- Developed more computationally efficient code to do pairwise comparisons, with Mutual Information and other distance metrics, in parallel using C and CUDA/OpenCL
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Publications

E. Hou, E. Lawrence, and A. O. Hero, "Penalized Ensemble Kalman Filters for High Dimensional Non-linear Systems." *arXiv preprint arXiv:1610.00195*.

E. Hou, Y. Yilmaz and A. O. Hero, “Anomaly Detection in Traffic Networks”, (in review IEEE TSP) *arXiv preprint arXiv:1804.09216*.

E. Hou and A. O. Hero, “Sequential Maximum Margin Classifiers for Partially Labeled Data”, *2018 IEEE International Conference on Acoustics, Speech and Signal Processing*.

E. Hou, K. Sricharan, and A. O. Hero, “Latent Laplacian Maximum Entropy Discrimination for Detection of High-Utility Anomalies”, *IEEE Transactions on Information Forensics and Security (2018)*.

E. Hou, Y. Yilmaz and A. O. Hero, “Diversion Detection in Partially Observed Nuclear Fuel Cycle Networks”, *ANS Advances in Nuclear Nonproliferation Technology and Policy Conference (2016)*.

Y. Yilmaz, **E. Hou** and A. O. Hero, “Online Diversion Detection in Nuclear Fuel Cycles via Multimodal Observations”, *ANS Advances in Nuclear Nonproliferation Technology and Policy Conference (2016)*.

J. Arroyo and **E. Hou**, “Efficient distributed estimation of inverse covariance matrices”, *2016 IEEE Statistical Signal Processing Workshop (SSP), Palma de Mallorca (2016)*.
