

# Elizabeth M. Hou

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<http://lizardintelligence.net>

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## Education

### University of Michigan, Ann Arbor

*Ph.D. Electric 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*

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## 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

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## Work and Research Experience

### Los Alamos National Labs

*Graduate Research Associate*

- Developed a penalized ensemble Kalman Filter for high-dimensional non-linear systems with applications to real space weather data

### University of Michigan

*Consortium for Verification Technology Fellow*

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

*Research Assistant*

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

*Graduate Student Instructor*

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

### Gifford Fong Associates

*Quantitative Financial Analyst*

- 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*

- 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", *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)*.

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