
EDUCATION

University of Massachusetts Amherst

PhD: Computer Science (Summer 2019)

Thesis: Learning with Noisy Aggregate Data

Cornell University

Master of Engineering: Computer Science (2011)

Bachelor of Science: Applied Physics (2010)

EXPERIENCE

University of Massachusetts Amherst, *PhD Research Assistant*

September 2014 - Present

- Conducting research into machine learning algorithms that preserve the privacy of individuals in sensitive data, e.g. health care records, location tracking, leading to publications at top conferences (ICML, NIPS)
- Working with ornithologists to better understand continent-wide bird migration, including automated extraction of migration information from weather radar, forecasting methods for migration hazards, and visualization of migration patterns

Amazon.com, *Music Machine Learning Group, Applied Scientist Intern*

Summer 2018

- Investigated the use of neural machine translation for correction of music content text queries
- Developed novel methods to extract high-fidelity training data from customer behavior
- Evaluated techniques for both scientific and customer impact, showing large improvement over baselines and leading to immediate push towards production

Amazon.com, *Personalization Algorithms Group, Applied Scientist Intern*

Summer 2017

- Developed a novel embeddings application for improving personalized recommendations across the retail website
- Created an extensive suite of testing tools to quantitatively and qualitatively evaluate the resulting embeddings
- Promising proof of concept results encouraged the team to further invest in the technology

McKesson Corporation, *Relay Health Client Services Team, Applied Scientist Intern*

Summer 2016

- Developed generalized additive model (GAM) to predict risk of readmission for hospital patients, allowing transition nurses to prioritize patient needs more effectively
- GAM outperformed expert knowledge checklist by 0.10 AUC in assessing historical data

MIT Lincoln Laboratory, *Intelligence and Decision Technologies, Associate Technical Staff*

2011-2014

- Developed machine learning-based tools for intelligence community users, working to understand customer needs across a diverse set of problems and deliver effective but usable solutions
- Devised a mixed-membership, agent-based, simulation model to generate easily parameterizable, high-fidelity network data, receiving Best Paper Award at the Annual Simulation Symposium
- Collaborated with colleagues in academia to create a principle framework for network detection, providing integral support by understanding each algorithm and network model in order to design empirical experiments. Our manuscript describing the detection theory and my empirical results is published in IEEE Transactions on Signal Processing.

FIRST AUTHOR PUBLICATIONS

- "Differentially Private Bayesian Inference for Exponential Families." *NIPS 2018*.
- "Differential Privacy for Undirected Graphical Models Using Collective Graphical Models." *ICML 2017*.
- "Consistently Estimating Markov Chains with Noisy Aggregate Data." *AISTATS 2016*.
- "Stochastic Agent-Based Simulations of Social Networks." *Annual Simulation Symposium 2013*. (BEST PAPER AWARD)