Ben London

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Research

Broadly speaking, I work on machine learning theory and algorithms, using theoretical analysis to inform the design of new ML algorithms. At Amazon, I have largely focused on problems related to product/content recommendation, such as: how to find relevant items; how to optimize the presentation of content to the user; how to learn from user feedback; how to estimate key business metrics without online experimentation; and how to ensure data quality. Looking forward, I am especially interested in ethical considerations for industrial ML, including privacy-constrained personalization, fairness to stakeholders, and sociological repercussions.

Areas: statistical learning theory; structured prediction; graphical models; deep learning; information retrieval; recommender systems; contextual bandits; offline policy evaluation and learning.

Employment

Amazon Music, *Principal ML Scientist*, 2023 – present.

Amazon Music, *Sr. ML Scientist*, 2018 – 2023.

Amazon Core ML, Seattle, *Machine Learning Scientist*, 2015 – 2018.

University of Maryland, LINQS Group, *Graduate Research Assistant*, 2011 – 2015.

Google Research, New York, *Research Intern*, Summer 2014.

Sentrana, Inc., *Software Engineer*, 2008 – 2010.

Education

Ph.D. Computer Science, University of Maryland College Park, 2010 – 2015. Advisor: Lise Getoor.
Dissertation: On the Stability of Structured Prediction.
Committee: Hal Daumé III, Larry S. Davis, Philip Resnik, Dan Roth.

M.S. Computer Science, Columbia University, 2006 – 2008. Advisor: Tony Jebara.

B.M. Music Technology, New York University, 1997 – 2001, *magna cum laude*.

Publications

Refereed Conference Papers

A. Buchholz, **B. London**, G. Di Benedetto, J. M. Lichtenberg, Y. Stein, T. Joachims. Counterfactual Ranking Evaluation with Flexible Click Models. *SIGIR*, 2024. (**oral presentation**)

B. London, L. Lu, T. Sandler, T. Joachims. Boosted Off-Policy Learning. *AISTATS*, 2023.

B. London, T. Sandler. Bayesian Counterfactual Risk Minimization. *ICML*, 2019.

S. Tomkins, S. Isley, **B. London**, L. Getoor. Sustainability at scale: towards bridging the intention-behavior gap with sustainable recommendations. *RecSys*, 2018.

B. London. A PAC-Bayesian Analysis of Randomized Learning with Application to Stochastic Gradient Descent. *NeurIPS*, 2017.

J. Pujara, **B. London**, L. Getoor. Budgeted Online Collective Classification. *UAI*, 2015.

B. London, B. Huang, L. Getoor. The Benefits of Learning with Strongly Convex Approximate Inference. *ICML*, 2015. (**oral presentation**)

B. London, B. Huang, B. Taskar, L. Getoor. PAC-Bayesian Collective Stability. *AISTATS*, 2014.

S. Bach, B. Huang, **B. London**, L. Getoor. Hinge-loss Markov Random Fields: Convex Inference for Structured Prediction. *UAI*, 2013.

B. London, B. Huang, B. Taskar, L. Getoor. Collective Stability in Structured Prediction: Generalization from One Example. *ICML*, 2013. (**oral presentation**)

Refereed Journal Articles

T. Joachims, **B. London**, Y. Su, A. Swaminathan, L. Wang. Recommendations as Treatments. *AI Magazine*, 2021.

O. Meshi, **B. London**, A. Weller, D. Sontag. Train and Test Tightness of LP Relaxations in Structured Prediction. *JMLR*, 2019.

B. London, B. Huang, L. Getoor. Stability and Generalization in Structured Prediction. *JMLR*, 2016.

G. Namata, **B. London**, L. Getoor. Collective Graph Identification. *ACM Transactions on Knowledge Discovery from Data*, 2015.

Refereed Workshop Papers

B. London, A. Buchholz, G. Di Benedetto, J. M. Lichtenberg, Y. Stein, T. Joachims. Self-Normalized Off-Policy Estimators for Ranking. *CONSEQUENCES Workshop – RecSys*, 2023. (**oral presentation**)

O. Jeunen, **B. London**. Offline Recommender System Evaluation under Unobserved Confounding. *CONSEQUENCES Workshop – RecSys*, 2023. (**oral presentation**)

J. M. Lichtenberg, A. Buchholz, G. Di Benedetto, M. Ruffini, **B. London**. Double clipping: Less-biased variance reduction in off-policy evaluation. *CONSEQUENCES Workshop – RecSys*, 2023. (**oral presentation**)

G. Di Benedetto, A. Buchholz, **B. London**, M. Jakimov, Y. Stein, J. M. Lichtenberg, V. Bellini, M. Ruffini. Contextual Position Bias Estimation Using a Single Stochastic Logging Policy. *LERI Workshop – RecSys*, 2023. (**oral presentation**)

A. Buchholz, **B. London**, G. Benedetto, T. Joachims. Off-Policy Evaluation for Learning-to-Rank via Interpolating the Item-Position Model and the Position-Based Model. *CONSEQUENCES+REVEAL Workshop – RecSys*, 2022. (**oral presentation**)

B. London, T. Joachims. Control Variate Diagnostics for Detecting Problems in Logged Bandit Feedback. *CONSEQUENCES+REVEAL Workshop – RecSys*, 2022. (**oral presentation**)

B. London. PAC Identifiability in Federated Personalization. *NeurIPS Workshop on Scalability, Privacy and Security in Federated Learning*, 2020. (**oral presentation**)

B. London, T. Joachims. Offline Policy Evaluation with New Arms. *NeurIPS Workshop on Offline Reinforcement Learning*, 2020.

B. London, T. Sandler. Bayesian Counterfactual Risk Minimization. *ICML Workshop on CausalML*, 2018.

B. London. Generalization Bounds for Randomized Learning with Application to Stochastic Gradient Descent. *NeurIPS Workshop on Optimizing the Optimizers*, 2016.

B. London, O. Meshi, A. Weller. Bounding the Integrality Distance of LP Relaxations for Structured Prediction. *NeurIPS Workshop on Optimization for Machine Learning*, 2016.

B. London, A. Schwing. Generative Adversarial Structured Networks. *NeurIPS Workshop on Adversarial Training*, 2016.

B. London, B. Huang, L. Getoor. On the Strong Convexity of Variational Inference. *NeurIPS Workshop on Advances in Variational Inference*, 2014.

B. London, B. Huang, B. Taskar, L. Getoor. PAC-Bayesian Generalization Bounds for Randomized Structured Prediction. *NeurIPS Workshop on Perturbations, Optimization and Statistics*, 2013. (**oral presentation**)

B. London, S. Khamis, S. Bach, B. Huang, L. Getoor, L. Davis. Collective Activity Detection using Hinge-loss Markov Random Fields. *CVPR Workshop on Structure Prediction: Tractability, Learning and Inference*, 2013. (**oral presentation**)

B. Huang, **B. London**, B. Taskar, L. Getoor. Empirical Analysis of Collective Stability. *ICML Workshop on Structured Learning (SLG)*, 2013.

B. London, B. Huang, L. Getoor. Improved Generalization Bounds for Large-scale Structured Prediction. *NeurIPS Workshop on Algorithmic and Statistical Approaches for Large Social Networks*, 2012.

B. London, T. Rekatsinas, B. Huang, L. Getoor. Multi-relational Weighted Tensor Decomposition. *NeurIPS Workshop on Spectral Learning*, 2012.

G. Namata, **B. London**, L. Getoor, B. Huang. Query-driven Active Surveying for Collective Classification. *ICML Workshop on Mining and Learning with Graphs*, 2012. (**oral presentation**)

J. Pujara, **B. London**, L. Getoor. Reducing Label Cost by Combining Feature Labels and Crowdsourcing. *ICML Workshop on Combining Label Strategies to Reduce Label Cost*, 2011.

Book Chapters

B. London, L. Getoor. Collective Classification of Network Data. *Data Classification: Algorithms and Applications*, Charu Aggarwal. CRC Press, 2013.

Technical Reports

B. London, T. Rekatsinas, B. Huang, L. Getoor. Multi-relational Learning Using Weighted Tensor Decomposition with Modular Loss. `http://arxiv.org/abs/1303.1733`, 2013.

B. London, B. Huang, L. Getoor. Graph-based Generalization Bounds for Learning Binary Relations. `http://arxiv.org/abs/1302.5348`, 2013.

Professional Service

Program Committee Member for: Algorithmic Learning Theory (ALT); Conference on Learning Theory (COLT); International Conference on Machine Learning (ICML); International Joint Conference on Artificial Intelligence (IJCAI); Journal of Machine Learning Research (JMLR); Neural Information Processing Systems (NeurIPS); Transactions of Knowledge Discovery from Data (TKDD); Uncertainty in Artificial Intelligence (UAI)

Co-chair for RecSys Industry Track, 2024

Area Chair for Neural Information Processing Systems (NeurIPS), 2020, 2021

Area Chair for the International Conference on Machine Learning (ICML), 2020, 2022

Area Chair for the International Conference on Learning Representations (ICLR), 2024

Sr. PC Member for the International Joint Conference on Artificial Intelligence (IJCAI), 2020

Co-organizer of the NeurIPS Workshop on Machine Learning with Guarantees, 2019

Co-organizer of the “Practical Bandits" tutorial (Web Conf., 2023; WSDM, 2024)

Program Chair for the Amazon Machine Learning Conference (AMLC), 2019

Co-organizer of the AMLC Workshop on Recommendation, 2018
Co-organizer of the AMLC Workshop on Deep Learning, 2017
Reviewer for the National Science Foundation (NSF), 2016

Awards and Honors

NeurIPS 2019 Top 400 Reviewer
ICML 2019 Top 5% Reviewer
NeurIPS 2015 Top 20 Reviewer

Teaching

Introduction to Machine Learning at Amazon, *Instructor*, 2017.
Artificial Intelligence, *Teaching Assistant*, Spring 2013. Instructor: Lise Getoor.
Machine Learning, *Teaching Assistant*, Fall 2010. Instructor: Lise Getoor.