

Sergey Kirshner

Résumé

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Summary

I am a statistical machine learning expert with 20 years of experience in modeling and understanding of large-scale noisy data in high-impact applications. My previous work spans applications of probabilistic approaches (including graphical and time series models) and Bayesian techniques to high-dimensional data understanding, modeling, prediction, and ranking to diverse areas including e-commerce, ad tech, hydrology, and large scale network analysis.

Education

University of California, Irvine

Ph.D., Information and Computer Science

2005

Thesis: Modeling of Multivariate Time Series Using Hidden Markov Models 📄

Advisor: Padhraic Smyth

University of California, Irvine

M.S., Information and Computer Science

2001

University of California, Berkeley

B.A., Mathematics & Computer Science (double)

1998

Recent Professional Experience

Facebook

Menlo Park, CA, USA

Research Scientist (Engineering Tech Lead)/Data Scientist

2017 – present

Responsible for opportunity analysis, goal setting, and guiding experimentation to improve search ranking and retrieval for Facebook Marketplace, the leading C2C commerce platform. Trained and deployed ranking models from TBs of search traffic and user actions data; implemented features under strict latency and capacity constraints; analyzed query and user activity traffic to find improvement opportunities and set team's goals; developed metrics to assess the improvements in MP Search.

@WalmartLabs

Sunnyvale, CA, USA

Director of Modeling/Principal Architect

2016 – 2017

Driving modeling and analytics projects for the Walmart Advertisement Platform for partnership marketing, including measurement, optimized audience segment construction, and real-time bidding on demand side platforms; building a team of scientists and engineers to convert Walmart's transaction and other data into ad tech products generating revenue for the company.

Skytree (acquired by Infosys)

San Jose, CA, USA

Principal Member of Technical Staff

2014 – 2015

Research and prototyping of machine learning approaches for classification and anomaly detection and for automation of the data science process including feature generation and selection, hyperparameter selection, and model estimation; leading customer projects and POCs; development of IP.

a9.com (Amazon)

Palo Alto, CA, USA

SDE/Machine Learning Scientist

2013 – 2014

Product search ranking by relevance: development and implementation of ranking approaches in a massive data setting with strict latency requirements, A/B hypothesis testing, deployment of ranking functions into production with impact to millions of customers daily, communication with business teams for decision making and planning.

Purdue University, Statistics

Assistant Professor

West Lafayette, IN, USA












2008 – 2013

Research: original statistical machine learning research with applications to modeling of multivariate atmospheric data and to understanding of large scale network behavior; funded collaborations with scientists from other disciplines.

Training: mentorship and supervision of graduate and undergraduate students, teaching and development of graduate and undergraduate courses in statistics and machine learning.

Selected Publications and Patent Applications

Full list (20+ peer-reviewed conference and journal publication; patent applications; workshop papers and tech reports) is available at sergeykirshner.com/publications .

- Y. Tang, F. Borisyuk, S. Malreddy, Y. Li, Y. Liu, **S. Kirshner**, 'MSURU: Large Scale E-commerce Image Classification with Weakly Supervised Search Data', in *Proceedings of the Twenty Fifth Conference on Knowledge Discovery and Data Mining*, pp. 2518-2526, August 2019 (KDD-2019 accepted/submitted 321/1808), 
- P. Yang, **S. Kirshner**, J. Korlimarla, 'Systems and methods for automated audiences set identification', U.S. Patent Application №16/163,294, filed on October 17, 2018.
- **S. Kirshner**, A. Gray, L. Kite, 'Modeling of geospatial location over time', U.S. Patent Application №15/254,958, filed September 1, 2016. 
- **S. Kirshner**, 'Constructing additive trees monotonic in selected sets of variables', U.S. Patent Application №15/178,549, filed June 9, 2016. 
- S. Moreno, J. Pfeiffer, J. Neville, **S. Kirshner**, 'A scalable method for exact sampling from Kronecker family models', in *Proceedings of the Fourteenth IEEE International Conference on Data Mining*, pp. 440-449, December 2014 (ICDM-2014, accepted/submitted 143/727) 
- S. Moreno, J. Neville, **S. Kirshner**, 'Learning mixed Kronecker product graph models with simulated method of moments', in *Proceedings of the Nineteenth ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, pp. 1052-1060, August 2013 (KDD-2013, accepted/submitted 126/726) 
- G. Mallya, S. Tripathi, **S. Kirshner**, R.S. Govindaraju, 'Probabilistic Assessment of Drought Characterization using a Hidden Markov Model', *Journal of Hydrologic Engineering*, volume 18, pp. 834-845, July 2013. doi:10.1061/(ASCE)HE.1943-5584.0000699 
- **S. Kirshner**, B. Póczos, 'ICA and ISA using Schweizer-Wolff dependence measure', in *Proceedings of the Twenty-Fifth International Conference on Machine Learning*, pp. 464-471, A. McCallum and S. Roweis (eds.), July 2008 (ICML-2008) (accepted/submitted 155/583) 
- **S. Kirshner**, 'Learning with tree-averaged densities and distributions', in *Advances in Neural Information Processing Systems 20*, pp. 761-768, J.C. Platt and D. Koller and Y. Singer and S. Roweis (eds.), MIT Press, Cambridge, MA, 2008 (NIPS-2007) (plenary session, plenary/accepted/submitted 26/217/975) 
- A.W. Robertson, **S. Kirshner**, P. Smyth, S.P. Charles, and B.C. Bates, 'Subseasonal-to-interdecadal variability of the Australian monsoon over North Queensland.' *The Quarterly Journal of Royal Meteorological Society*, volume 132, number 615, pp. 519-542, January 2006. doi:10.1256/qj.05.75 
- **S. Kirshner**, P. Smyth, A.W. Robertson, 'Conditional Chow-Liu tree structures for modeling discrete-valued vector time series,' in *Proceedings of the Twentieth Conference on Uncertainty in Artificial Intelligence*, pp. 317-324, M. Chickering, J. Halpern (eds.), AUAI Press, July 2004 (UAI-2004) (plenary session, plenary/accepted/submitted 27/75/253) 
- A.W. Robertson, **S. Kirshner**, and P. Smyth, 'Daily rainfall occurrence over Northeast Brazil and its downscalability using a hidden Markov model.' *Journal of Climate*, volume 17, issue 22, pp. 4407-4424, November 2004. doi:10.1175/JCLI-3216.1 

Technical Skills

Programming Languages: Python, C/C++

Computing/Statistical Software: NumPy, SciPy, pandas, scikit-learn, R, Matlab

Data Manipulation: Hive/Presto/SQL

Document Preparation: L^AT_EX