Brian J. Taylor

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Contact Information:

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Skills:
- Machine learning: causal inference, logistic regression, decision trees and random forests, Bayesian networks, Relational Learning, NNs.
- Languages: Java, Python, R, SQL, Unix Shell, Scala, C
- Technologies: Spark, PostgreSQL, Hive, git, AWS (S3, DDB, Kinesis, Redshift, EC2, SQS, SNS, EMR), Unix, OSX, Eclipse, Office
- Other: Quasi-experimental designs, A/B testing, V&V, peer production systems, Agile/Scrum.

Education:

University of Massachusetts Amherst, PhD Computer Science   September 2015
Dissertation: Informed Search for Learning Causal Structure

University of Massachusetts Amherst, MS Computer Science
Thesis: Photobase – A Research Platform to Investigate Peer Production and   May 2008
Collaborative Sensing Systems

West Virginia University, MS Electrical Engineering   Dec 1999

West Virginia University, BS Electrical and Computer Engineering   May 1997

Professional Experience:

Amazon.com, Inc   Seattle, WA
Machine Learning Engineer, 2013-2016   March 2013-Current
Applied Scientist, 2016-Current

Advertising Platform
- Worked in the area of *optimization*, developing predictive models to meet advertising delivery goals such as conversions, clicks, and purchases and extending the advertising systems to gather and incorporate features used in modeling.
- Developed experiments to prove that optimizing for clicks in click-based advertising counteracts optimizing for purchases.
- Developed key components to infrastructure of the second-generation ad serving platform to enable business growth that can support 1MM concurrent ads.

Institute for Scientific Research, Inc.   Fairmont, WV
Principle Member Research, PI   1999-2006
Verification and Validation of Neural Networks
- Led a team of researchers in the investigation and development of novel techniques into neural network software verification and validation.
- Developed a neural network rule extraction algorithm to translate a self-organizing neural network called DCS into a formal set of association rules.

- Part of Intelligent Flight Control Systems project by NASA Dryden Flight Research Center that developed a flight-qualified intelligent flight control system for an experimental F-15 aircraft.

Research Experience:

University of Massachusetts   Amherst, MA
Graduate Researcher; Advisor: David Jensen   2005-Sept 2015

- Development of a generalized approach to learning of causal models as a causal Markov-decision processes which utilize policies that choose actions from formalized causal inference.
- Development of an extension of the causal learning constraint-based PC algorithm to work in relational domains.
- Developed a small mobile application called Photobase to investigate peer production and collaborative sensing systems.
- Conducted a study into the causal effects of user behavior in peer production systems by system design and presentation.

Publications (Selected):

Dissertation & Theses

Taylor, Brian J. *Informed Search for Learning Causal Structure*. Computer Science Department, University of Massachusetts, Amherst, MA, September 2015 (defended August 20, 2015).

Taylor, Brian J. *Photobase – A Research Platform to Investigate Peer Production and Collaborative Sensing Systems*. Computer Science Department, University of Massachusetts, Amherst, MA, May 2008.

Books and Chapters

Pullum, Laura L., B. Taylor, M. Darrah. *Guidance for the Verification and Validation of Neural Networks.* Wiley-IEEE Computer Society, March 2007.

Taylor, Brian J. Editor. *Methods and Procedures for the Verification and Validation of Artificial Neural Networks*. Springer, 2005.

Journal Articles & Conference Papers

Oktay, Huseyin, B. Taylor, and D. Jensen. Causal Discovery in Social Media Using Quasi-Experimental Designs. In the Proceedings of the ACM/SIGKDD Workshop on Social Media Analytics, Washington D.C. 2010.

Maier, Marc, B. Taylor, H. Oktay, and D. Jensen. Learning Causal Models of Relational Domains. Proceedings of the Twenty-Fourth AAAI Conference on Artificial Intelligence. 2010.

Jensen, David, A. Fast, B. Taylor, M. Maier. Automatic Identification of Quasi-Experimental

Brian J. Taylor
Designs for Discovering Causal Knowledge. Submitted to the 14th ACM SIGKDD International
Conference on Knowledge Discovery and Data Mining, February 29, 2008.