Jacquelyn A. Shelton

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Citizenship USA

Education

Technische Universität Berlin,
Dr. rer. nat., Computer Science, 6.2018

- Advisor: Jörg Lücke
- Supervisor: Klaus-Robert Müller
- Thesis: Large-scale Approximate EM-style Learning and Inference in Generative Graphical Models for Sparse Coding
- Group: Machine Learning and Intelligent Data Analysis

Frankfurt Institute for Advanced Studies,
Researcher, Computer Science, 10.2010 – 2013

- Advisor: Jörg Lücke
- Group: Machine Learning and Computational Neuroscience
- Reviewer: IEEE-TPAMI, NIPS, and IEEE-TKDE

Eberhard Karls Universität Tübingen,
M.Sc., Computer Science, 8.2010

- Advisors: Matthew Blaschko, Christoph Lampert, Andreas Bartels
- Thesis: Semi-supervised Subspace Learning and Application to Human Functional Magnetic Brain Resonance Imaging Data
- Conducted at Max Planck Institute for Biological Cybernetics, Dept. Schölkopf, Impirical Inference
- Minor in Psychology

Cornell University

- Teaching Assistantship, College of Arts and Sciences, 1.2006 – 4.2007
- Graduate Research Assistantship, Psychology Department, Field Lab, 4.2006 – 9.2006
- Teaching Assistantship, College of Life Science, 8.2005 – 12.2005

University of Michigan–Flint,
B.S., Experimental Psychology, 8.2005

- with Honors
- Minor in Computer Science

Publications

Shelton, J. A., Gasthaus, J., Dai, Z., Lücke, J, and Gretton, A.: *GP-select: Accelerating EM using adaptive subspace preselection*. Neural Computation 29(8):21772202, 2017.

Shelton, J. A., Sheikh, A-S., Bornschein, J., Sterne, P., and Lücke, J: *Nonlinear spike-and-slab sparse coding for interpretable image encoding*. PLOS ONE, May 08, 2015.

Shelton, J. A., Gasthaus, J., Dai, Z., Lücke, J, and Gretton, A.: *GP-select: Accelerating EM using adaptive subspace preselection.* Women in Machine Learning Workshop

in conjunction with NIPS, 2014.

Sheikh, A-S., Shelton, J. A., and Lücke, J: *A Truncated EM Approach for Spike-and-Slab Sparse Coding*. Journal of Machine Learning Research (JMLR), 15:2653-2687, 2014.

Shelton, J. and Lampert, C.: *Approximate Inference with ϵ-insensitive Marginal Loss*. Women in Machine Learning Workshop in conjunction with NIPS, 2013.

Lücke, J., Shelton, J., Bornschein, J., Sterne, P., Berkes, P., and Sheikh, A-S: *Combining Feed-Forward Processing and Sampling for Neurally Plausible Encoding Models*. Cosyne, 2013.

Shelton, J.A., Sterne, P., J. Bornschein, A.-S. Sheikh, and J. Lücke: *Why MCA? Nonlinear sparse coding with spike-and-slab prior for neurally plausible image encoding*. Proceedings of the Twenty-Sixth Annual Conference on Neural Information Processing Systems, (NIPS 2012).

Shelton, J.A., J. Bornschein, A.-S. Sheikh, P. Berkes, and Lücke, J. *Select and Sample A Model of Efficient Neural Inference and Learning*. Proceedings of the Twenty-Fifth Annual Conference on Neural Information Processing Systems, (NIPS 2011).

Dai, Z., Shelton, J., Bornschein, J., Sheikh, A. S., and Lücke, J. *Combining approximate inference methods for efficient learning on large computer clusters*. NIPS'11 workshop on Big Learning: Algorithms, Systems, and Tools for Learning at Scale, 2011.

Bornschein, J., Shelton, J. A., Sheikh, A. S., and Lücke, J. *The Maximal Causes of Binary Data*. Bernstein Conference on Comp. Neuroscience (BCCN), 2011.

Blaschko, M., Shelton, J., Bartels, A., Lampert, C., H., and Gretton, A. *Semi-supervised Kernel Canonical Correlation Analysis with Application to human fMRI.* Pattern Recognition Letters, 32(11):1572-1583, 2011.

Shelton, J. A., Blaschko, M. B., Gretton, A., Müller, J., Fischer, E., and Bartels, A.: *Similarities in Resting State and Feature-driven Activity: Non-parametric Evaluation of Human fMRI*. NIPS Workshop on Learning and Planning from Batch Time Series Data, 2010.

Blaschko, M., Shelton, J., and Bartels, A. *Augmenting Feature-driven fMRI Analyses: Semi-supervised learning and resting state activity.* Proceedings of the Twenty-Third Annual Conference on Neural Information Processing Systems (NIPS 2009).

Shelton, J., Blaschko, M., Lampert, C. H., and Bartels, A. *Semi-supervised Analysis of Human fMRI data*, Berlin Brain Computer Interface Workshop on Advances in Neurotechnology, July 2009.

Shelton, J., Blaschko, M., and Bartels, A. *Semi-supervised subspace analysis of human functional magnetic resonance imaging data*, Max Planck Institute Tech Report, (185), May 2009.

Invited Talks

- Lecture series on Probabilistic Machine Learning and Bayesian Reasoning at the *Data Science Retreat* (2014 – 2015)
- Select and Sample - A Model of Efficient Neural Inference and Learning.

- *Technical University Darmstadt*, Darmstadt, Germany, (6 2012).
- *Institute for Science and Technology (IST) Austria*, Vienna, Austria, (2 2012).
- *Radbound University Nijmegen*, Nijmegen, Netherlands, (1 2012).

- Semi-supervised Kernel Canonical Correlation Analysis of Human fMRI Data, *Women in Machine Learning Workshop*, held in conjunction with NIPS. (12 2009).

Employment

- TomTom, Berlin
  Develop machine learning methods and models for geospatial data, Artifical Intelligence Geospatial Research Group, 10.2018 – 10.2019

- Data Science Retreat, Berlin
  Lecture series on Bayesian Reasoning and Probabilistic Modelling, 2014 – 2015

- Max Planck Institute for Intelligent Systems, Germany
  Hilfswissenschaftler (Research Assistant), Department of Empirical Inference, Prof. Schölkopf, 5.2009 – 8.2010
  Hilfswissenschaftler (Research Assistant), Department of Psychophysics, Prof. Bühltoff, 8.2007 – 10.2007
- Cornell University, Ithaca, NY
  Teaching Assistantship, College of Arts and Sciences, 1.2006 – 4.2007
  Teaching Assistantship, College of Life Science, 8.2005 – 12.2005
- University of Michigan-Flint, Flint, MI
  Statistics Tutor, 2003 –2005
  Research Assistant to Dr. T. William Altermatt, 2002 – 2005
  Computer Lab Assistant, 2002 – 2005

Research Internships

- Institute of Science and Technology Austria, 3.2013 – 6.2013
  Computer Vision and Machine Learning – Dr. Christoph Lampert
  Project on efficient inference using Gibbs sampling in undirected graphs
- Gatsby Computational Neuroscience Unit, 10.2011 – 1.2012
  with Dr. Arthur Gretton
  Project on accelerating EM using adaptive subspace preselection
- Eberhard Karls Universität Tübingen, 6.2008 – 12.2008
  Graphical Interactive Systems Department – Dr. Strasser
  Project on spatial-temporal induced boundaries
- Cornell University, Ithaca, NY, 1.2006 – 4.2007
  Field (Vision Science) Lab – Dr. David J. Field
  Project on statistics of natural images
- University of California, Santa Barbara, CA, 4.2004 – 6.2004
  Research Center for Virtual Environments and Behavior – Dr. Jim Blascovich
  Undergraduate Honors Thesis on perception in virtual environments

Scholarships and Awards

- Women in Machine Learning, travel grant for conference attendance (NIPS 2013, 2012, 2011, 2010, 2009)
- Advanced Computing Machines (ACM), grant for women in computing for conference attendance (NIPS 2009)

- National Geospatial Intelligence Agency, grant for satellite image analysis
  Cornell University, Graduate Research Assistantship, Summer 2006
- National Science Foundation Graduate Research Fellowship
  Honorable Mention, 2006
- National Science Foundation Graduate Research Fellowship
  Honorable Mention, 2005
  Start-up grant, Partnership for Advanced Computational Infrastructure facility
- Raphelson Prize, University of Michigan–Flint, 2004
- Psi Chi Summer Research Grant, 2004
- Frances Frazier Student Travel Grant, University of Michigan–Flint, 2004
- Honors Off-Campus Study Grant, University of Michigan-Flint, 2004
- Office of Research Annual Fund Grant, University of Michigan–Flint, 2004
- Undergraduate and Graduate Research, Scholarly and Creative Activity Grant, University of Michigan-Flint, 2004
- Harold and Agape Kallis Scholarship, University of Michigan-Flint, 2004
- Honors Scholar Program Scholarship, University of Michigan-Flint, 2003 – 2005
- Freeman Distance Learning Scholarship, University of Michigan-Flint, 2003 – 2005
- Freeman Psychology Scholarship, University of Michigan-Flint, 2003 – 2005
- MEAP (Michigan Educational Assessment Program) Scholarship, 2001

Languages

- English, Native
- German, Professional fluency

References

- Prof. Dr. Andreas Bartels
  Department of Neurophysiology, Max Planck Institute for Biological Cybernetics, Tübingen, Germany
  Centre for Integrative Neuroscience, Universität Tübingen, Germany
  Email: andreas.bartels@tuebingen.mpg.de

- Prof. Dr. Matthew Blaschko
  Center for Processing Speech & Images, KU Leuven, Leuven, Belgium
  Email: matthew.blaschko@esat.kuleuven.be

- Prof. Dr. Arthur Gretton
  Gatsby Computational Neuroscience Unit, University College London, UK
  Machine Learning Department, Carnegie Mellon University, USA
  Department of Empirical Inference, Max Planck Institute for Intelligent Systems, Germany
  Email: arthur.gretton@gmail.com

- Prof. Dr. Christoph H. Lampert
  Department of Computer Vision and Machine Learning, Institute for Science and Technology Vienna, Austria
  Email: chl@ist.ac.at

- Prof. Dr. Jörg Lücke
  Arbeitsgruppe Machine Learning und Exzellenzcluster Hearing4all
  Department für Medizinische Physik und Akustilk, Universität Oldenburg, Germany
  Email: joerg.luecke@uni-oldenburg.de

- Prof. Dr. Klaus-Robert Mueller
  TU Berlin, Machine Learning Group
  Department of Software Engineering and Theoretical Computer Science, Germany
  Email: klaus-robert.mueller@tu-berlin.de

- Prof. Dr. Bernhard Schölkopf
  Department of Empirical Inference, Max Planck Institute for Intelligent Systems, Tübingen, Germany
  Email: bs@tuebingen.mpg.de