STEFANIE JEGELKA
CURRICULUM VITAE

Massachusetts Institute of Technology
Computer Science and Artificial Intelligence Laboratory
Dept. of EECS
Cambridge, MA 02139
stefje@csail.mit.edu

POSITIONS HELD

X-Consortium Career Development Assistant Professor, since Jan 2015
Dept. of EECS, MIT
(chair since March 2015)

EDUCATION

Ph.D. (Dr.sc. ETH Zürich) in **Computer Science**, Feb 2008 – March 2012
Max Planck Institute for Intelligent Systems, Tübingen, Germany and ETH Zurich, Switzerland
Dissertation Title: *Combinatorial Problems with Submodular Coupling in Machine Learning and Computer Vision*
Advisors: Jeff Bilmes, Bernhard Schölkopf, Andreas Krause

Diplom in **Bioinformatics** with distinction, Dec 2007
University of Tübingen, Germany
Thesis: *Statistical Learning Theory Approaches to Clustering*
Thesis advisors: Ulrike von Luxburg, Michael Kaufmann

Exchange student, Aug 2003 - May 2004
The University of Texas at Austin, Dept. of Computer Science

VISITING POSITIONS AND CONSULTING

Weekly Visitor/Consulting Researcher
Microsoft Research New England; Dec 2017–Dec 2018

Invited Long-Term Participant
Simons Institute for the Theory of Computing, Program on *Bridging Continuous and Discrete Optimization*; Fall 2017

Invited Long-Term Participant
Simons Institute for the Theory of Computing, Program on *Foundations of Machine Learning*; Spring 2017

OTHER RESEARCH EXPERIENCE

Postdoctoral Researcher
University of California Berkeley; May 2012–Dec 2014
Advisors: Michael I. Jordan, Trevor Darrell

Research Intern
Microsoft Research, Redmond; June-Sept 2011
Advisors: Eric Horvitz, Ashish Kapoor

Research Assistant
Max Planck Institute for Biological Cybernetics, Germany; 2005-2007
Advisors: Arthur Gretton, Ulrike von Luxburg

Research Intern
Georgetown University, Dept. of Neuroscience, Washington D.C.; May-Oct 2004
Advisor: Maximilian Riesenhuber

Conference Course
The University of Texas at Austin, Dept. of Computer Science; Jan-May 2004
Advisors: James A. Bednar, Risto Miikkulainen

SELECTED HONORS, AWARDS AND FELLOWSHIPS

Sloan Research Fellowship, 2018

Joseph A Martore Award (for Exceptional Contributions to Education in the MIT Institute for Data, Systems and Society), 2017

DARPA Young Faculty Award (YFA), 2017

Adobe Research Award, 2017

Google Faculty Research Award, 2016

NSF CAREER Award, 2016

German Pattern Recognition Award (Deutscher Mustererkennungspreis), 2015

ICML Best Paper Award (International Conference on Machine Learning), 2013

Google Anita Borg Europe Fellowship, 2008

Diplom with Distinction, University of Tübingen, 2007

Member of the Scientific College for Neuroscience, German National Academic Foundation, 2005-2007

Traineeship Grant, Klee Foundation (www.s-fk.de), May 2004
for a research internship at Georgetown University Medical Center

Honors List, The University of Texas at Austin, Dec 2003

Scholar of the German National Academic Foundation (Studienstiftung des Deutschen Volkes), Feb 2003-Aug 2007

ThinkQuest Gold Award (10,000 USD fellowship) and American Zoo Association Award, 2000

Childnet International Award, 2001

PUBLICATIONS

Journal Papers

1. E. Kim, K. Huang, S. Jegelka and E. Olivetti. Virtual Screening of Inorganic Materials Synthesis Parameters with Deep Learning. *npj Computational Materials*, 3(53), 2017.
2. S. Jegelka and J. Bilmes. Graph Cuts with Interacting Edge Costs – Examples, Approximations, and Algorithms. *Mathematical Programming Series A* 162, pp. 241-282, 2017.
3. S. Jegelka, A. Kapoor and E. Horvitz. An Interactive Approach to Solving Correspondence Problems. *International Journal of Computer Vision*, 2013.
4. H. Shen, S. Jegelka and A. Gretton. Fast Kernel-based Independent Component Analysis. *IEEE Transactions on Signal Processing* 57(9), pp. 3498–3511, 2009.
5. S. Jegelka, J. A. Bednar and R. Miikkulainen. Prenatal Development of Ocular Dominance in a Self-organizing Model of V1. *Neurocomputing* 69, pp. 1291–1296, 2006. Presented at the *Computational Neuroscience Meeting*, 2005.

Conference Papers and Book Chapters

6. A. Gkotovos, S. Jegelka, H. Hassani, A. Krause. Discrete Sampling using Semigradient-based Product Mixtures. *Conference on Uncertainty in Artificial Intelligence (UAI)*, 2018. **Oral presentation**
7. K. Xu, C. Li, Y. Tian, T. Sonobe, K. Kawarabayashi, S. Jegelka. Representation Learning on Graphs with Jumping Knowledge Networks. *International Conference on Machine Learning (ICML)*, 2018. **Long talk**
8. D. Alvarez-Melis, T.S. Jaakkola and S. Jegelka. Structured Optimal Transport. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2018. **Oral presentation**
9. Z. Wang, C. Gehring, P. Kohli and S. Jegelka. Batched Large-scale Bayesian Optimization in High-dimensional Spaces. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2018.
10. B. Mirzasoleiman, S. Jegelka and A. Krause. Streaming Non-monotone Submodular Maximization: Personalized Video Summarization on the Fly. *AAAI Conference on Artificial Intelligence (AAAI)*, 2018.
11. M. Staib, S. Claici, J. Solomon and S. Jegelka. Parallel Streaming Wasserstein Barycenters. *Neural Information Processing Systems (NIPS)*, 2017.
12. C. Li, S. Jegelka, S. Sra. Column Subset Selection via Polynomial Time Dual Volume Sampling. *Neural Information Processing Systems (NIPS)*, 2017.
13. M. Staib, S. Jegelka. Robust Budget Allocation via Continuous Submodular Functions. *International Conference on Machine Learning (ICML)*, 2017.
14. Z. Wang, S. Jegelka. Max-value Entropy Search for Efficient Bayesian Optimization. *International Conference on Machine Learning (ICML)*, 2017.
15. Z. Wang, C. Li, S. Jegelka, P. Kohli. Batched High-dimensional Bayesian Optimization via Structural Kernel Learning. *International Conference on Machine Learning (ICML)*, 2017.
16. H. Song, S. Jegelka, V. Rathod and K. Murphy. Deep Metric Learning via Facility Location. *International Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. **Spotlight**
17. Z. Wang, S. Jegelka, L. P. Kaelbling and T. Lozano-Perez. Focused Model-Learning and Planning for Non-Gaussian Continuous State-Action Systems. *IEEE International Conference on Robotics and Automation (ICRA)*, 2017.
18. G. Shulkind, S. Jegelka and G. W. Wornell. Multiple wavelength sensing array design. *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* 2017.
19. C. Li, S. Sra, S. Jegelka. Fast Mixing Markov Chains for Strongly Rayleigh Measures, DPPs, and Constrained Sampling. *Neural Information Processing Systems (NIPS)*, 2016. (covered by MIT News and ACM Technews)
20. J. Djolonga, S. Jegelka, S. Tschiatschek, A. Krause. Cooperative Graphical Models. *Neural Information Processing Systems (NIPS)*, 2016.
21. C. Li, S. Sra, and S. Jegelka. Gaussian quadrature for matrix inverse forms with applications. *International Conference on Machine Learning (ICML)*, 2016.
22. C. Li, S. Jegelka, S. Sra. Fast DPP Sampling for Nyström with Application to Kernel Methods. *International Conference on Machine Learning (ICML)*, 2016.
23. H. Song, Y. Xiang, S. Jegelka and S. Savarese. Deep Metric Learning via Lifted Structured Feature Embedding. *International Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016. **Spotlight**
24. C. Li, S. Jegelka and S. Sra. Efficient Sampling for k-Determinantal Point Processes. *Conference on Artificial Intelligence and Statistics (AISTATS)*, 2016. **Oral presentation**.
25. Z. Wang, B. Zhou and S. Jegelka. Optimization as Estimation with Gaussian Processes in Bandit Settings. *Conference on Artificial Intelligence and Statistics (AISTATS)*, 2016. **Oral presentation**.

26. S. Azadi, J. Feng, S. Jegelka and T. Darrell. Auxiliary Image Regularization for Deep CNNs with Noisy Labels. *International Conference on Learning Representations (ICLR)*, 2016.
27. X. Pan, S. Jegelka, J. Gonzalez, J. Bradley and M.I. Jordan. Parallel Double Greedy Submodular Maximization. *28th Annual Conference on Neural Information Processing Systems (NIPS)*, 2014.
28. R. Nishihara, S. Jegelka and M.I. Jordan. On the Linear Convergence Rate of Decomposable Submodular Function Minimization. *28th Annual Conference on Neural Information Processing Systems (NIPS)*, 2014.
29. A. Prasad, S. Jegelka and D. Batra. Submodular meets Structured: Finding Diverse Subsets in Exponentially-Large Structured Item Sets. *28th Annual Conference on Neural Information Processing Systems (NIPS)*, 2014. **Spotlight**.
30. H. Song, Y.J. Lee, S. Jegelka and T. Darrell. Weakly-supervised Discovery of Visual Pattern Configurations. *28th Annual Conference on Neural Information Processing Systems (NIPS)*, 2014.
31. V. Strnadova, A. Buluc, J. Chapman, J. Gonzalez, S. Jegelka, J. Gilbert, D. Rokhsar and L. Oliker. Efficient and Accurate Clustering for Large-Scale Genetic Mapping. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2014.
32. R. Iyer, S. Jegelka and J. Bilmes. Monotone Closure of Relaxed Constraints in Submodular Optimization: Connections Between Minimization and Maximization. *Conference on Uncertainty in Artificial Intelligence (UAI)*, 2014.
33. H. Song, R. Girshick, S. Jegelka, J. Mairal, Z. Harchaoui and T. Darrell. On learning to localize objects with minimal supervision. *International Conference on Machine Learning (ICML)*, 2014.
34. J. Feng, S. Jegelka and T. Darrell. Learning Scalable Discriminative Attributes with Sample Relatedness. *IEEE Conference of Computer Vision and Pattern Recognition (CVPR)*, 2014. **Oral presentation**.
35. X. Pan, J. Gonzalez, S. Jegelka, T. Broderick and M.I. Jordan. Optimistic Concurrency Control for Distributed Unsupervised Learning. *27th Annual Conference on Neural Information Processing Systems (NIPS)*, 2013.
36. S. Jegelka, F. Bach and S. Sra. Reflection methods for User-Friendly Submodular Optimization. *27th Annual Conference on Neural Information Processing Systems (NIPS)*, 2013.
37. R. Iyer, S. Jegelka and J. Bilmes. Curvature and Optimal Algorithms for Learning and Minimizing Submodular Functions. *27th Annual Conference on Neural Information Processing Systems (NIPS)*, 2013.
38. R. Iyer, S. Jegelka and J. Bilmes. Fast Semidifferential-based Submodular Function Optimization. *30th International Conference on Machine Learning (ICML)*, 2013. **Best Paper Award**.
39. P. Kohli, A. Osokin and S. Jegelka. A Principled Deep Random Field for Image Segmentation. *IEEE Conference of Computer Vision and Pattern Recognition (CVPR)*, 2013.
40. S. Jegelka, H. Lin and J. Bilmes. On Fast Approximate Submodular Optimization. *25th Annual Conference on Neural Information Processing Systems (NIPS)*, 2011.
41. S. Jegelka and J. Bilmes. Online Submodular Minimization for Combinatorial Structures. *28th International Conference on Machine Learning (ICML)*, 2011.
42. S. Jegelka and J. Bilmes. Approximation Bounds for Inference using Cooperative Cut. *28th International Conference on Machine Learning (ICML)*, 2011.
43. S. Jegelka and J. Bilmes. Submodularity beyond Submodular Energies: Coupling Edges in Graph Cuts. *IEEE Conference of Computer Vision and Pattern Recognition (CVPR)*, 2011. **Oral presentation** (3.5% acceptance rate).
44. S. Jegelka, S. Sra and A. Banerjee. Approximation Algorithms for Tensor Clustering. *Algorithmic Learning Theory: 20th International Conference (ALT)*, 2009.
45. S. Nowozin and S. Jegelka. Solution Stability in Linear Programming Relaxations: Graph Partitioning and Unsupervised Learning. *26th International Conference on Machine Learning (ICML), 2009.*

46. S. Jegelka, A. Gretton, B. Schölkopf, B.K. Sriperumbudur and U. von Luxburg. Generalized Clustering via Kernel Embeddings. *KI 2009: Advances in Artificial Intelligence*, 2009.
47. U. von Luxburg, S. Bubeck, S. Jegelka and M. Kaufmann. Consistent Minimization of Clustering Objective Functions. *21st Annual Conference on Neural Information Processing Systems (NIPS)*, 2007.
48. H. Shen, S. Jegelka and A. Gretton. Fast Kernel ICA using an Approximate Newton Method. *11th Conference on Artificial Intelligence and Statistics (AISTATS)*, 2007.
49. S. Jegelka and A. Gretton. Brisk Kernel Independent Component Analysis. In L. Bottou, O. Chapelle, D. DeCoste, J. Weston, editors. *Large Scale Kernel Machines*, pp. 225–250. MIT Press, 2007.

Abstracts and Contributions to Peer-reviewed Workshops

1. M. Staib, B. Wilder and S. Jegelka. Distributionally Robust Submodular Maximization. *ICML Workshop on Modern Trends in Nonconvex Optimization for Machine Learning*, 2018. **Spotlight**.
2. M. Staib and S. Jegelka. Distributionally Robust Deep Learning as a Generalization of Adversarial Training. *NIPS Machine Learning and Computer Security Workshop*, 2017.
3. A. Lenail, L. Schmidt, J. Li, T. Ehrenberger, K. Sachs, S. Jegelka and E. Fraenkel. Graph-Sparse Logistic Regression. *NIPS workshop on Discrete Structure in Machine Learning (DISCML)*, 2017.
4. Z. Wang, C. Gehring, P. Kohli, S. Jegelka. Batched Large-scale Bayesian Optimization in High-dimensional Spaces. *NIPS workshop on Bayesian Optimization (BayesOpt)*, 2017.
5. D. Alvarez Melis, T. Jaakkola and S. Jegelka. Structured Optimal Transport. *NIPS workshop on Optimal Transport and Machine Learning (OTML)*, 2017. **Oral presentation**.
6. M. Cohen, L. Schmidt, C. Hegde, S. Jegelka. Efficiently Optimizing over (Non-Convex) Cones via Approximate Projections. *NIPS workshop on Optimization in Machine Learning (OPTML)*, 2017. **Oral presentation**.
7. M. Staib and S. Jegelka. Wasserstein k-means++ for Cloud Regime Histogram Clustering. *Climate Informatics*, 2017.
8. Z. Wang, B. Zhou and S. Jegelka. Optimization as Estimation with Gaussian Processes in Bandit Settings. *NIPS 2015 workshop on Bayesian Optimization: Scalability and Flexibility*.
9. E. Shelhamer, S. Jegelka and T. Darrell. Communal Cuts. *NIPS 2014 Workshop on Discrete Optimization in Machine Learning*.
10. V. Strnadova, A. Buluç, L. Oliker, J. Gonzalez, S. Jegelka, J. Chapman and J. R. Gilbert. Fast Clustering Methods for Genetic Mapping in Plants. *16th SIAM Conference on Parallel Processing for Scientific Computing (PP14)*, 2014.
11. A. Prasad, S. Jegelka and D. Batra. Submodular Maximization and Diversity in Structured Output Spaces. *NIPS 2013 Workshop on Discrete and Combinatorial Problems in Machine Learning*.
12. R. Iyer, S. Jegelka and J. Bilmes. Mirror-Descent like Algorithms for Submodular Optimization. *NIPS 2012 Workshop on Discrete Optimization in Machine Learning*.
13. P. Kohli, A. Osokin and S. Jegelka. A Principled Deep Random Field for Image Segmentation. *NIPS 2012 Workshop on Discrete Optimization in Machine Learning*.
14. S. Jegelka and J. Bilmes. Multi-label Cooperative Cuts. *CVPR 2011 Workshop on Inference in Graphical Models with Structured Potentials.*
15. S. Jegelka and J. Bilmes. Coupling Edges in Graph Cuts. *SIAM Conference on Optimization*, 2011.
16. S. Jegelka and J. Bilmes. Online Algorithms for Submodular Minimization with Combinatorial Constraints. *NIPS 2010 Workshop on Discrete Optimization in Machine Learning.*
17. S. Jegelka and J. Bilmes. Cooperative Cuts: Graph Cuts with Submodular Edge Weights. *EURO XXIV (24th European Conference on Operational Research)*, 2010.
18. S. Jegelka and J. Bilmes. Notes on Graph Cuts with Submodular Edge Weights. *NIPS 2009 Workshop on Discrete Optimization in Machine Learning.*

19. C. Lippert, O. Stegle, S. Jegelka, Y. Altun and K. M. Borgwardt. Predicting related traits from SNP markers by multi-task learning. *German Conference on Bioinformatics*, 2009.
20. S. Jegelka, A. Gretton and D. Achlioptas. Kernel ICA for Large Scale Problems. *NIPS 2005 Workshop on Large Scale Kernel Machines.*

Technical Reports

1. S. Jegelka and J. Bilmes. Cooperative Cuts for Image Segmentation, UWEETR-1020-0003, University of Washington, 2010.
2. S. Jegelka and J. Bilmes. Cooperative Cuts: Graph Cuts with Submodular Edge Weights. MPI-TR 189, 2010.
3. S. Sra, S. Jegelka and A. Banerjee. Approximation Algorithms for Bregman Clustering, Co-Clustering and Tensor Clustering. MPI-TR 177, 2008.
4. B. Kulis, S. Sra and S. Jegelka. Scalable Semidefinite Programming using Convex Perturbations. TR 07-47, University of Texas at Austin, 2007.
5. H. Shen, S. Jegelka and A. Gretton. Geometric Analysis of Hilbert Schmidt Independence Criterion based ICA contrast function. TR PA006080, NICTA, 2006.

INVITED TALKS AND TUTORIALS

Tutorials and summer school courses

1. L. Orecchia, M. Fazel and S. Jegelka. Continuous Methods for Discrete Optimization. Invited lectures at the Bridging Continuous and Discrete Optimization Bootcamp, Simons Institute for the Theory of Computing (Program on Bridging Continuous and Discrete Optimization), Berkeley, Aug 2017.

2. S. Jegelka. Submodular Functions and Machine Learning. Invited lectures at the Machine Learning Summer School (MLSS), Tübingen, June 2017.

3. A. Krause and S. Jegelka. Submodularity: Theory and Applications. Invited lectures at the Machine Learning Bootcamp, Simons Institute for the Theory of Computing (Program on Foundations of Machine Learning), Berkeley, Jan 2017.

4. S. Jegelka. Submodular Functions and Machine Learning. Invited lectures at the Machine Learning Summer School (MLSS), Cádiz, May 2016.

5. S. Jegelka. Submodular Functions and Machine Learning. Invited short course at the University of Heidelberg, Germany, Jan 2016.

6. S. Jegelka. Submodularity in Machine Learning. Invited lectures at the Machine Learning Summer School (MLSS), Kyoto, Aug 2015.

7. S. Jegelka. Submodular Optimization and Machine Learning. Invited lectures at the Microsoft Research Summer School on Machine Learning, Bangalore, June 2015.

8. S. Jegelka, L. Ladicky, S. Ramalingam, C. Russell. Energy Minimization and Discrete Optimization. Full day tutorial at the IEEE International Conference on Computer Vision (CVPR), Boston, June 2015.

9. S. Jegelka. Efficiently Handling Discrete Structure in Machine Learning. Invited lectures at the MADALGO summer school, Aarhus, Aug 2014.

10. A. Krause and S. Jegelka. Submodularity in Machine Learning: New Directions. Tutorial at the International Conference on Machine Learning, Atlanta, June 2013.

11. S. Jegelka and A. Krause. Submodularity in Machine Learning and Computer Vision. Tutorial at the DAGM-OAGM Symposium, Graz, Aug 2012.

12. A. Krause and S. Jegelka. Submodularity in Artificial Intelligence. Invited Tutorial at the European Conference on Artificial Intelligence (ECAI), Montpellier, Aug 2012.

Invited Talks

Computational Research in Boston and Beyond (CRIBB) seminar, MIT, Nov 2018 *(upcoming)*
Allerton Conference, session on *Submodular function optimization*, Oct 2018 *(upcoming)*
Workshop on *Real Algebraic Geometry and Optimization*, Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, Oct 2018 *(upcoming)*
International Conference on Complex Systems (ICCS), Cambridge, July 2018
SIAM Discrete Mathematics Conference, Minisymposium on *Foundations of Data Science*, June 2018

NIPS workshop *Bayesian Optimization for Science and Engineering (BayesOpt)*, Dec 2017
CISE seminar, Center for Information and Systems Engineering, Boston University, Oct 2017
Berkeley Information Systems Seminar, UC Berkeley, Oct 2017
Neyman seminar, Dept. of Statistics, UC Berkeley, Sep 2017
Georgia Tech ARC Colloquium, Algorithms and Randomness Center, Sep 2017
MSR Colloquium, MSR New England, Aug 2017
University College London, Gatsby Unit, May 2017
Machine Learning Diversity Event, Department of Statistics, Oxford University, May 2017
Workshop on *Optimization and Statistical Learning*, Les Houches, April 2017
Models, Inference & Algorithms Seminar, Broad Institute, Mar 2017

NIPS workshop on *Nonconvex Optimization*, Dec 2016
New England Machine Learning Day, Microsoft Research New England, May 2016
Image and Video Computing Seminar, Boston University, Apr 2016
ORC seminar, Operations Research Center, MIT, March 2016
Applied Statistics seminar, Harvard University, March 2016
Pattern Theory Seminar, Dept. of Applied Mathematics, Brown University, Feb 2016
Center for Scientific Computing, University of Heidelberg, Germany, Jan 2016

CMStatistics, London, Dec 2015
WNCG seminar, University of Texas at Austin, Nov 2015
Award lecture, German Conference on Pattern Recognition, RWTH Aachen University, Oct 2015
Strata + Hadoop World, Hardcore Data Science Track, New York, Sept 2015
Workshop on *Data-driven Algorithmics*, Harvard University, Sept 2015
IMA workshop on *Convexity and Optimization: Theory and Applications*. Institute for Mathematics and its Applications, Univ. of Minnesota, Feb 2015

Simons Institute for the Theory of Computing, UC Berkeley, Nov 2014
Cornell University, Dept. of Computer Science, May 2014
University of California San Diego, Dept. of Computer Science (CSE), April 2014
MIT, Dept. of EECS, April 2014
Princeton University, Dept. of Computer Science, April 2014
Cornell University, Dept. of Operations Research and Information Engineering, March 2014
Harvard University, Dept. of Computer Science (SEAS), March 2014
Microsoft Research, Cambridge, UK, March 2014
California Institute of Technology, Dept. of Electrical Engineering, March 2014
University College London, Gatsby Unit, March 2014
Saarland University, Saarbrücken, Germany, March 2014
University of British Columbia, Dept. of Computer Science, Feb 2014
UC Berkeley, Algebraic Statistics Seminar, Feb 2014

The University of Tokyo, Optimization Seminar, Dept. of Mathematical Informatics, Jan 2014

Carnegie Mellon University, Dept. of Statistics, Nov 2013
Washington University St. Louis, Dept. of Computer Science, Oct 2013
Carnegie Mellon University, Dept. of Machine Learning, Sep 2013
EPFL, School of Computer and Communication Sciences (IC), April 2013
UC Davis, seminar on Algebra and Discrete Mathematics, Feb 2013

INRIA, SIERRA team, Paris, Dec 2012
MIT, LIDS, Aug 2012
Session on "Methods from Discrete Mathematics in Systems Biology", *International Symposium on Mathematical Programming (ISMP)*, Berlin, 2012
Mitsubishi Electric Research Lab (MERL), Boston, March 2012

Technical University Munich, Dept. of Mathematics, Oct 2011
UC Berkeley, Dept. of EECS, Sept 2011
Cornell University, Dept. of Computer Science, Sept. 2011
Toyota Technological Institute (TTI) Chicago, Aug 2011
Microsoft Research Redmond, Computer Vision Group, July 2011
ETH Zurich, Dept. of Computer Science, April 2011
COSA workshop: Combinatorial Optimization, Statistics and Applications, Technical University Munich, March 2011

Symposium on Computer Vision and Machine Learning, Institute of Science and Technology Austria, Oct 2010

TEACHING

At MIT:

6.419/439, IDS.012/131 Statistics, Computation and Applications, Lecturer
Dept. of EECS and Institute for Data, Systems and Society, MIT (with Caroline Uhler), Fall 2018

6.419/439, IDS.012/131 Statistics, Computation and Applications, Lecturer
Dept. of EECS and Institute for Data, Systems and Society, MIT (with Caroline Uhler), Fall 2017

MIT Professional Education: Machine Learning and Big Data, Lecturer
with Tommi Jaakkola, Regina Barzilay, Summer 2017

6.862 Applied Machine Learning, Lecturer
Dept. of EECS, MIT, Spring 2017

IDS.012/131 Statistics, Computation and Applications, Lecturer
Dept. of EECS and Institute for Data, Systems and Society, MIT (with Caroline Uhler), Fall 2016

MITx Professional Education: Data Science: Data to Insights, Lecturer
Institute for Data, Systems and Society, MIT (course organizers: Devavrat Shah, Philippe Rigollet), Summer/Fall 2016 (and recurring every semester)

6.046/18.410 Design and Analysis of Algorithms, Lecturer
Dept. of EECS, MIT (with Constantinos Daskalakis, Vinod Vaikuntanathan), Spring 2016

6.883 Advanced Machine Learning: Learning with Combinatorial Structure, Lecturer
Dept. of EECS, MIT, Fall 2015

6.437 Inference and Information, Lecturer
Dept. of EECS, MIT (with Gregory Wornell), Spring 2015

Other Teaching:

Discrete Mathematics and Logic, Teaching Assistant
Dept. of Mathematics, University of Tübingen, Spring 2003
Supervising professor: Manfred Wolff

Advanced C++, Grader
Dept. of Computer Science, University of Tübingen, Fall 2002
Supervising professor: Rüdiger Loos

Guest lectures
6.034 Artificial Intelligence, MIT, Nov 2015

EE 227A Convex Optimization, UC Berkeley, Feb 2013

GRANTS/FUNDING

DARPA Lagrange: Foundations of Scalable Nonconvex Optimization
co-PI with Ali Jadbabaie, Alexander Rakhlin, Suvrit Sra

MIT-IBM Watson grant: Debugging Neural Networks
co-PI with Antonio Torralba

MIT Systems That Learn grant: Partially Opening the Black Box: Robustness and Stability for Complex Machine Learning Models

NSF BIGDATA: Towards Automating Data Analysis: Interpretable, Interactive, and Scalable Learning via Discrete Probability
co-PI with Suvrit Sra

Adobe Data Science Research Award: Scalable, Adaptive Media Summarization

DARPA Young Faculty Award: The Promise of Diversity: Geometry, Probability, Optimization and Machine Learning (area: Geometric Methods in Optimization)

NSF Small: Submodular Optimization Techniques for Sensing, Signal Processing, and Inference
co-PI with Gregory W. Wornell

MIT Research Support Committee Grant

NSF CAREER Award: Scalable Learning with Combinatorial Structure

Google Faculty Research Award

MIT-Shell Compressive Sensing Project
co-PI with Piotr Indyk, Tomaso Poggio, Tommi Jaakkola, Tamara Broderick

Funding for DISCML 2012 (NIPS workshop on Discrete Optimization in Machine Learning)

Funding for DISCML 2011 (NIPS workshop on Discrete Optimization in Machine Learning)

Funding for DISCML 2010 (NIPS workshop on Discrete Optimization in Machine Learning)

STUDENTS SUPERVISED

Postdoc
Hongzhou Lin

Graduate students
Chengtao Li, MIT, (co-advised with Suvrit Sra)
Matthew J. Staib, MIT
Keyulu Xu, MIT
Zhi Xu, MIT (co-advised with John Tsitsiklis)
Zi Wang, MIT, (co-advised with Leslie Kaelbling and Tomas Lozano-Pérez)

Robert Nishihara, UC Berkeley, (with Michael I. Jordan), Spring 2014
Evan Shelhamer, UC Berkeley, (with Trevor Darrell), Spring 2013–Fall 2013
Hyun Oh Song, UC Berkeley, (with Trevor Darrell), Fall 2012–Fall 2013, *now Assistant Professor at Seoul National University*

Charlotte Bunne, Master's student from ETH, Summer/Fall 2018
Ilija Bogunovic, visiting student from EPFL, Fall 2017
Alkis Gkotovos, visiting student from ETH, Summer 2016
Josip Djolonga, visiting student from ETH, Summer 2015

Undergraduate students
Kritkorn Karntikoon, MIT SuperUROP, Fall 2017-Spring 2018
Andreea Bobu, MIT SuperUROP, Fall 2016-Spring 2017 (with Polina Golland), *now PhD student at UC Berkeley*
Yi (Tony) Zeng, MIT UROP, Spring 2017 (with Elsa Olivetti), *now at Lyft*
Victoria Gong, MIT SuperUROP, Fall 2015-Spring 2016 (with Elsa Olivetti)
Thanard Kurutach, MIT UROP, Summer 2015, *now PhD student at UC Berkeley*
Wei Hu, MIT UROP, visiting undergraduate student from Tsinghua University, Spring 2015, *now PhD student at Princeton*

Ph.D. Thesis committee member
Ilija Bogunovic, EPFL EE
Theresa Cloutier, MIT Chemical Engineering
Andreea Gane, MIT EECS
Maxwell Philip Gold, MIT Bioengineering
Paul Grigas, MIT ORC
Hongzhou Lin, INRIA
Sepideh Mahabadi, MIT EECS
Paresh Malalur, MIT EECS
Zelda Mariet, MIT EECS
David Reshef, MIT EECS
Alvin Shi, MIT CSB
Gal Shulkind, MIT EECS
Berk Ustun, MIT EECS
Fulton Wang, MIT EECS
Shenhao Wang, MIT Urban Studies and Planning
Tong Wang, MIT EECS
Young Gyu Yoon, MIT EECS
Chiyuan Zhang, MIT EECS
Yan Zhao, MIT EECS

PROFESSIONAL SERVICE

Workshop/Session/Seminar Organization

NIPS workshop on "Discrete Structure in Machine Learning", Dec 2017
with Yaron Singer, Amin Karbasi, Jeff Bilmes, Andreas Krause

NIPS workshop on "Nonconvex Optimization", Dec 2016
with Percy Liang, Anima Anandkumar, Hossein Mobahi, Anna Choromanska

Workshop on "Learning and Optimization" (organizer), Data Learning and Inference meeting (DALI), Sestri Levante, April 2016
with Guillaume Obozinski

Invited session on "Submodularity in Machine Learning – Theory and Practice" (session chair), International Symposium on Mathematical Programming, July 2015

New England Machine Learning Day (NEML), May 2015
with Carla Brodley, Finale Doshi-Velez, Adam Kalai

NIPS Workshop "Discrete Optimization in Machine Learning (DISCML)", Dec 2014
with Jeff Bilmes, Andreas Krause

NIPS Workshop "Discrete Optimization in Machine Learning (DISCML)", Dec 2010-2013
with Jeff Bilmes, Andreas Krause, Pradeep Ravikumar

Short Course on Theoretical Neuroscience; for the College of Neuroscience, German National Academic Foundation (Studienstiftung), 2006
with Philipp Berens

Steering Committee, DIMACS/Simons Collaboration on *Bridging Continuous and Discrete Optimization*, 2018–2020
special focus program as a follow-up to the Simons Institute Program with the same title

Workshop for *Women in Data Science (WiDS)*, Cambridge, February 2017 and March 2018

MIT Machine Learning Colloquium, organizer

Area Chair / Senior Program Committee
Conference on Neural Information Processing Systems (NIPS) 2016-18
International Conference on Machine Learning (ICML) 2016-17
Conference on Artificial Intelligence and Statistics (AISTATS) 2016
Conference on Uncertainty in Artificial Intelligence (UAI) 2015

Other Chairing / Committees
Awards Committee, International Conference on Machine Learning (ICML), 2017
Proceedings Chair, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2016

Reviewing
Journal of Machine Learning Research
IEEE Transactions on Pattern Analysis and Machine Intelligence
Mathematical Programming
SIAM Journal on Computing
International Conference on Machine Learning (ICML) 2009, 2012, 2013, 2015
Conference on Uncertainty in Artificial Intelligence (UAI) 2012
Annual Conference on Neural Information Processing Systems (NIPS) 2009, 2010, 2014
AAAI Conference on Artificial Intelligence (AAAI) 2010
Annual Conference on Learning Theory (COLT) 2010, 2013, 2015, 2016
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD) 2009, 2010
NIPS Workshop on Discrete Optimization in Machine Learning 2010-2014
ACM-SIAM Symposium on Discrete Algorithms (SODA) 2015
IEEE Annual Symposium on Foundations of Computer Science (FOCS) 2016

Elected Student Representative in the Faculty Council (Fakultätsrat)
Dept. of Computer Science, University of Tübingen; Oct 2002-July 2003.