

# CURRICULUM VITAE OF ANDREAS KRAUSE

*Associate Professor of Computer Science, ETH Zürich*

April 2016

## CONTACT INFORMATION

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## EDUCATIONAL BACKGROUND

**Ph.D. in Computer Science**, Carnegie Mellon University, December 2008.

**M. Sc. in Computer Science**, Carnegie Mellon University, August 2008.

**Diplom in Mathematik**, (M.Sc. equiv. in Mathematics) Technische Universität München, Sept. 2004.

**Diplom in Informatik**, (M.Sc. equiv. in Computer Science) Technische Universität München, Apr. '04.

## PROFESSIONAL EXPERIENCE

**Professor of Computer Science**, ETH Zurich (Assistant Prof. 2011-2014, Associate Prof. since Jan'15).

Leading the *Learning & Adaptive Systems Group*.

Member of the *Institute of Machine Learning*.

Associated member of the *Institute of Science, Technology and Policy*.

**Assistant Professor of Computer Science** (Jan.'09-Dec.'12); **Visiting Associate** (since Jan.'13), Caltech

Member of the *Rigorous Systems Research Group (RSRG)*, *Computation and Neural Systems (CNS)* faculty and *Center for the Mathematics of Information (CMI)* faculty at Caltech.

## ACADEMIC HONORS AND RECOGNITIONS

- *European Research Council (ERC) Starting Grant*, 2012
- *Microsoft Research Faculty Fellow*, 2012
- *Deutscher Mustererkennungspreis* (highest award of German Pattern Recognition Society DAGM) 2012
- *Kavli Frontiers Fellow*, National Academy of Sciences 2010
- *NSF CAREER Award* 2010
- *Okawa Foundation Award* recognizing top young researcher in the telecommunications field, 2009
- *Honorable Mention for the CMU School of Computer Science Distinguished Dissertation Award*, 2009
- *Microsoft Research Graduate Fellowship* 2007-2008
- *Top score* at Battle of the Water Sensor Networks (BWSN) sensor placement challenge '07

## AWARDS FOR PUBLICATIONS

- *Best Student Paper Award* for the paper “Tradeoffs for Space, Time, Data and Risk in Unsupervised Learning”, at AISTATS 2015
- *IJCAI-JAIR Best Paper Award 2013* for the paper “Adaptive Submodularity: Theory and Applications in Active Learning and Stochastic Optimization”, awarded annually to an outstanding paper published in the Journal of AI Research in the preceding 5 years
- *Best Paper Award* for the paper “A Fresh Perspective: Learning to Sparsify for Detection in Massive, Noisy Sensor Networks”, at IPSN 2013
- *Best Conference Robotics Paper Award Nominee* for the paper “Robot Navigation in Dense Human Crowds: the Case for Cooperation”, at ICRA 2013
- *Best Paper Award Nominee* for the paper ““Smart” Design Space Sampling to Predict Pareto-Optimal Solutions”, at LCTES 2012
- *IJCAI-JAIR Best Paper Runner Up Award 2012* for the paper “Optimal Value of Information in Graphical Models”, awarded annually to an outstanding paper published in JAIR in the preceding 5 years
- *Outstanding Paper Award* for the paper “Dynamic Resource Allocation in Conservation Planning”, at AAAI 2011
- *Best Research Paper Award Honorable Mention* for the paper “Inferring Networks of Diffusion and Influence” at KDD 2010
- *Best Research Paper Award* of the ASCE Journal of Water Resources Planning and Management Engineering for the paper “Efficient Sensor Placement Optimization for Securing Large Water Distribution Networks” 2008
- *Best Student Paper Award* for the paper “Cost-effective Outbreak Detection in Networks” at KDD 2007
- *Best Paper Award* for the paper “Near-optimal Sensor Placements: Maximizing Information while Minimizing Communication Cost” at IPSN 2006
- *Best Paper Runner Up Award* for the paper “Near-optimal Sensor Placements in Gaussian Processes”, ICML 2005
- *Best Paper Runner Up Award* for the paper “Near-optimal Nonmyopic Value of Information in Graphical Models” at UAI 2005
- *NRW Undergraduate Science Award* for publishing an outstanding journal paper (IEEE Transactions on Mobile Computing) during undergraduate studies – April 2005

## TEACHING AWARDS

- *VIS Teaching Award* at ETH Zurich 2013
- *Golden Owl* teaching award at ETH Zurich 2012

## COURSES TAUGHT (ETH ZURICH)

- 252-0220-00L – Learning and Intelligent Systems (Spring 2016)
- 252-5051-00L – Seminar: Advanced Topics in Machine Learning (Fall 2015)
- 263-5210-00L – Probabilistic Artificial Intelligence (Fall 2015)
- 263-5200-00L – Data Mining: Learning from Large Data Sets (Fall 2015)
- 252-0220-00L – Learning and Intelligent Systems (Spring 2015)
- 252-5051-00L – Seminar: Advanced Topics in Machine Learning (Fall 2014)
- 263-5210-00L – Probabilistic Artificial Intelligence (Fall 2014)
- 263-5220-00L – Projects in Machine Learning: Selected Topics (Spring 2014)
- 263-5200-00L – Data Mining: Learning from Large Data Sets (Spring 2014)

- 252-0535-00L – Machine Learning (Fall 2013)
- 263-5210-00L – Probabilistic Artificial Intelligence (Fall 2013)
- 263-5200-00L – Data Mining: Learning from Large Data Sets (Spring 2013)
- 263-5210-00L – Probabilistic Artificial Intelligence (Fall 2012)
- 263-5200-00L – Data Mining: Learning from Large Data Sets (Spring 2012)
- 252-0807-00L – Information Systems Laboratory (Spring 2012).
- 263-5210-00L – Probabilistic Artificial Intelligence (Fall 2011)
- 252-0341-01L – Information Retrieval (Fall 2011, with Donald Kossmann and Thomas Hofmann)
- 263-5200-00L – Data Mining: Learning from Large Data Sets (Spring 2011)
- 252-0807-00L – Information Systems Laboratory (Spring 2011).

#### COURSES TAUGHT (CALTECH)

- CS/CNS/EE 154 – Artificial Intelligence (Fall '10/'11)
- CS/CNS/EE 253 – Advanced Topics in Machine Learning (Winter '09/'10).
- CS/CNS/EE 155 – Probabilistic Graphical Models (Fall '09/'10).
- CS 101.2 – Active Learning and Optimized Information Gathering (Winter '08/'09).

#### ADVISING AND THESIS COMMITTEES

##### CURRENT POSTDOCTORAL SCHOLARS:

- Hamed Hassani (since 04/2014)
- Sebastian Tschatschek (since 02/2015)
- Jens Witkowski (since 06/2015)

##### CURRENT PH.D. STUDENTS:

- Aytunç Şahin (since 01/2016) – with Joachim Buhmann
- Felix Berkenkamp (since 02/2015)
- Olivier Bachem (since 10/2014)
- Josip Djolonga (since 02/2014)
- Alkis Gotovos (since 10/2013)
- Baharan Mirzasoleiman (since 02/2013)
- Mario Lčić (since 01/2013)
- Adish Singla (since 01/2012)
- Yuxin Chen (since 09/2011)

##### CURRENT M.SC. STUDENTS:

- Svetoslav Karaivanov (since 03/2016)
- Matteo Pozzetti (since 03/2016)
- Nico Neureiter (since 02/2016)
- Rabeeh Karimi (since 10/2015)
- Diego Ballesteros Villamizar (since 10/2015)

##### PH.D. STUDENT COMMITTEE MEMBER:

- Carl Malings, Carnegie Mellon University Dept. of Civil and Environmental Engineering, Ph.D. committee, since 10/2015
- Eyrún Eyjólfsdóttir, California Institute of Technology Dept. of Electrical Engineering, Ph.D. committee, since 05/2014

- Yanan Sui, California Institute of Technology Computation & Neural Systems Program, Ph.D. committee, since 02/2014
- Bo Chen, California Institute of Technology Dept. of Electrical Engineering, Ph.D. committee, since 01/2014
- Ulrich Schwesinger, ETH Dept. Mechanical and Process Engineering, Ph.D. committee, since 10/2013

## FORMER STUDENTS AND POSTDOCS

### FORMER POSTDOCTORAL SCHOLARS ASSOCIATED WITH THE GROUP

- Dr. Gábor Bartók (07/2012-08/2014); now at Google
- Dr. Amin Karbasi (03/2013-07/2014; ETH Fellow); now Assistant Professor at Yale University
- Dr. Daniel Golovin (09/2009-07/2011, partially supported by CMI), now at Google
- Dr. Imre Risi Kondor (09/2009-07/2011, partially supported by CMI), now Assistant Professor at the University of Chicago Computer Science and Statistics
- Dr. Dan Feldman (02/2010-07/2011, supported by CMI), now Assistant Professor at the University of Haifa

### PH.D. STUDENTS SUPERVISED

- Hastagiri P. Vanchinathan (05/2011-12/2015) – *Learning to Recommend: Interactive Learning with Limited Feedback*. Now Research and Development Lead at 1plusx.
- Matthew Faulkner (09/2009-05/2014, at Caltech) – *Community Sense and Response Systems*. Now Data Scientist at Qadium.
- Peter Stobbe (09/2009-05/2013, at Caltech) – *Convex Analysis for Minimizing and Learning Submodular Set Functions*. Now Quantitative Researcher at Optiver.
- Pete Trautman (01/2010-04/2012, at Caltech, coadvised with Richard Murray) – *Robot Navigation in Dense Crowds: Statistical Models and Experimental Studies of Human Robot Cooperation*. Now at Boeing Research & Technology.
- Stefanie Jegelka (external Ph.D. student at Max-Planck Institute for Intelligent Systems, co-supervised by Jeff Bilmes and Bernhard Schölkopf) – *Combinatorial Problems with Submodular Coupling in Machine Learning and Computer Vision*. Now Assistant Professor at the Massachusetts Institute of Technology.

### M.SC. STUDENTS SUPERVISED

- Philippe Fatio (09/2015-03/2016, with ElectricFeel) – *Understanding Station-Less, Free-Floating Electric Scooter Sharing Systems*
- Johannes Kirschner (10/2015-03/2016) – *Sequential Indirect Information Maximization*
- Riccardo Moriconi (04/2015-10/2015) – *Safe controller learning with Gaussian processes dynamic programming*
- Matteo Turchetta (04/2015-10/2015) – *Safe Exploration in Model Based Reinforcement Learning with Gaussian Processes*
- Mathias Solér (03/2015-09/2015, with Disney) – *Learning Sounds of Objects from Videos in the Wild*
- Hany Abdelrahman (02/2015-08/2015, with ABB) – *Bayesian Optimization for Maximum Power Point Tracking in Photovoltaic Power Plants*
- Stefan Willi (11/2014-05/2015, with ESA) – *Reinforcement Learning for Spacecraft Maneuvering*
- Jian Zhang (10/2014-04/2015) – *Higher-Order Inference for Multi-class Log-supermodular Models*
- Kirill Zhuravlev (since 11/2014, with Teralytics) – *Highway Traffic Speed Estimation from Cell Phone Data*
- Olivier Bachem (02/2014-08/2014) – *Coresets for the DP-Means Clustering Problem*

- Nedyalko Prisadnikov (02/2014-08/2014) – *Exploration–Exploitation Tradeoffs via Probabilistic Matrix Factorization*
- Mircea Greco (01/2014-01/2014) – *Navigability in Information Networks*
- Marco Santoni (11/2013-05/2014, w. Electric Feel) – *Incentives for Optimizing Bike Sharing Systems*
- Jiang Yu (11/2013-05/2014, w. B. Price at Xerox PARC) – *Hierarchical Dirichlet Process Hidden Semi-Markov Model for Anomaly Detection in Distributed Framework*
- Victor Carbune (10/2013-04/2014) – *Active Learning for Source Localization*
- Victor Ungureanu (10/2013-04/2014) – *WikiMining – Summarising Wikipedia using submodular function maximisation*
- Ian Lienert (03/2013-10/2013) – *Exploiting Side Information in Partial Monitoring Games*
- Hiroaki Shioi (02/2013-08/2013) – *Active Object Detection on Micro-UAV Data for Biodiversity Monitoring*
- Thorben Bochenek (11/2012-05/2013) – *Optimizing Workplans for Supermarkets via Submodular Functions*
- Cesar Fuentes Montesinos (10/2012-04/2013) – *Efficient Active Object Detection with Deformable Parts Model*
- Andreas Marfurt (10/’12-04/’13, w. D. Kossmann) – *Predicting Price Changes for Flight Bookings*
- Andreas Tschofen (10/2012-04/2013, with D. Kossmann) – *Joint Inference of Concepts and Networks of Documents*
- Alkis Gkotovos (10/2012-04/2013) – *Active Learning for Level Set Estimation*
- Josip Dzulonga (10/2012-04/2013) – *High-Dimensional Gaussian Process Bandit Optimization*
- Ilija Bogunovic (05/2012-11/2012) – *Robust Protection of Networks against Cascading Phenomena*
- Nan Zhong (05/2012-11/2012) – *Towards a Unified Approach to Diffusion Network Inference*
- Nina Gonova (04/2012-09/2012, with Google Zurich) – *Skimming Google News: Large-scale Topic Modeling using Coresets on MapReduce*
- Giovanni A. Garcia (03/2012-08/2012, with Markus Pueschel) – *High-Performance Submodular Function Minimization*
- Jonathan Ziller (09/2011-04/2012; with Srdjan Capkun) – *Machine Learning for Fraud Detection in Online Banking Environments*
- Benjamin Rupprechter (09/2011-04/2012; with Google Zurich) – *Noisy Active Learning from a Bayesian Perspective*
- Isidor Nikolic (09/2011-03/2012) – *Large Scale Book Recommendation*
- Philippe Pautex (09/2011-03/2012; with T. Maillart) – *Innovation Dynamics of Open Source Software*
- Vincent Martinez (09/2011-03/2012; with D. Kossmann and Amadeus) – *Flight Delay Prediction*

FORMER PH.D. STUDENT THESIS COMMITTEE MEMBER:

- Gregory Hitz, ETH Dept. of Mechanical and Process Engineering, Ph.D. committee, 11/2012-02/2016
- Ina Fiterau, Carnegie Mellon University, Machine Learning Department, Ph.D. committee, 05/2014-08/2015
- Rishabh Iyer, University of Washington Dept. of Computer Science and Engineering, Ph.D. committee, 10/2013-03/2015
- Max Beinhofer, Universitaet Freiburg, Ph.D. committee, 01/2014-08/2014
- Debayjoti Ray, California Institute of Technology Dept. of Electrical Engineering, Ph.D. committee, 2009-06/2014
- Alexander Schwing, ETH Dept. Computer Science, Ph.D. committee, 11/2013-01/2013
- Gajamohan Mohanarajah, ETH Dept. Mech. and Process Engineering, Ph.D. committee, 04/2012-04/2014
- Ralf Kaestner, ETH Dept. of Mechanical and Process Engineering, Ph.D. committee, 05/2012-01/2013

- Annie Liu, Caltech Computing and Mathematical Sciences, Ph.D. candidacy committee, 10/2011;
- Peter Welinder, Caltech Computation and Neural Systems, Ph.D. thesis committee, 08/2011-05/2012;
- Ryan Gomes, Caltech Computation and Neural Systems, Ph.D. thesis committee, 08/2010-01/2011;
- Thomas Desautels, Caltech Mechanical Engineering, Ph.D. candidacy committee, 05/2010-06/2013;

## PROFESSIONAL MEMBERSHIPS

IEEE, ACM, AAAI, DAGM.

## ADVISORY BOARD MEMBER

ElectricFeel Scientific Advisory Board.

## PROFESSIONAL ACTIVITIES

### OUTREACH:

*Invited Talk on "Big Data" at ETH Treffpunkt Science City (March 2014).*

*Panelist at "The Science of Iron Man" in the Science & Entertainment exchange program of the National Academy of Sciences (Caltech, October 2010).*

### CHAIRING INVITED SESSIONS AT CONFERENCES:

*Session on Active Learning and Sequential Design. IMS/ASA Spring Research Conference 2012, Harvard University, Boston, USA.*

### CONFERENCE COMMITTEE SERVICE:

*Member of the International Machine Learning Society (IMLS) Board since 2015*

*NIPS Award Committee 2013*

### SUMMER SCHOOL ORGANIZATION:

*ETH/MPI Research Network on Learning Systems Summer School, June 2014.*

### WORKSHOP ORGANIZATION:

*Data Efficient Machine Learning workshop at ICML 2016, with M. Deissenroth, S. Mohamed, D. Finales, M. Welling.*

*Data-Driven Algorithmics workshop at Harvard University, September 2015, with Y. Singer.*

*DALI Workshop "Networks: Processes and Causality", April 2015, with M. G. Rodriguez and J. Peters.*

*NIPS Workshop "Discrete Optimization in Machine Learning", December 2014, with J. Bilmes (University of Washington) and S. Jegelka (UC Berkeley).*

*NIPS Workshop "Machine Learning for Sustainability", December 2013, with E. Bonilla (NICTA), T. Dietterich (Oregon State University) and T. Damosoulas (NYU).*

*NIPS Workshop "Discrete Optimization in Machine Learning: Theory and Practice", December 2013, with P. Ravikumar (University of Wisconsin), J. Bilmes (University of Washington) and S. Jegelka (UC Berkeley).*

*NIPS Workshop “Discrete Optimization in Machine Learning: Structure and Scalability”*, December 2012, with P. Ravikumar (University of Wisconsin), J. Bilmes (University of Washington) and S. Jegelka (Max Planck Institute for Biological Cybernetics, Tübingen).

*NIPS Workshop “Discrete Optimization in Machine Learning: Uncertainty, Generalization and Feedback”*, December 2011, with P. Ravikumar (University of Wisconsin), J. Bilmes (University of Washington) and S. Jegelka (Max Planck Institute for Biological Cybernetics, Tübingen).

*NIPS Workshop “Discrete Optimization in Machine Learning: Structures, Algorithms and Applications”*, December 2010, with P. Ravikumar (University of Wisconsin), J. Bilmes (University of Washington) and S. Jegelka (Max Planck Institute for Biological Cybernetics, Tübingen).

*RSS Workshop “Active Learning in Robotics”*, June 2010, with Ruben Martinez-Cantin (Instituto Superior Tecnico, Lisbon, Portugal) and Jan Peters (MPI Tuebingen, Germany).

*Dagstuhl Seminar “Probabilistic Methods for Perceiving, Learning and Reasoning about Everyday Activities”*, June 2010, with M. Beetz (TU München), T. Choudhury (Dartmouth), F. de la Torre (CMU), D. Fox (University of Washington).

*NIPS Workshop “Discrete Optimization in Machine Learning: Submodularity, Polyhedra and Sparsity”*, December 2009, with P. Ravikumar (University of Wisconsin) and J. Bilmes (University of Washington).

#### PANELS AND PROPOSAL REVIEWING:

*European Research Council*, External Reviewer, 2016

*Swiss National Science Foundation*, 2011, 2014, 2015, 2016

*Oesterreichische Forschungsförderungsgesellschaft mbH (FFG)*, 2015

*Israel Science Foundation*, 2015

*Agence Nationale de la Recherche (ANR)*, 2014, 2015

*Netherlands Organisation for Scientific Research (NWO)*, 2011

*Natural Sciences and Engineering Research Council of Canada*, 2011

*US National Science Foundation*, 2010, 2013

*US Department of Energy*, 2009

#### EDITORSHIP:

ACM Transactions on Sensor Networks (Associate Editor, 2010-2015)

Journal of Artificial Intelligence Research (Associate Editor, since 2014)

Journal of Machine Learning Research (Action Editor, since 2014)

AI Access Foundation (Associate Editor, since 2013)

#### MANUSCRIPT REVIEWING:

Foundations and Trends in Machine Learning. now publishers.

STAR Series. Springer

#### JOURNAL REVIEWING:

Journal of Machine Learning Research

Journal of Machine Learning Research Machine Learning Open Source Software

Journal of Artificial Intelligence Research

Journal of Computational and Graphical Statistics

Journal of Dynamic Systems, Measurement and Control

IEEE Transactions on Automatic Control

IEEE Transactions on Knowledge and Data Engineering

IEEE Transactions on Information Theory

IEEE Transactions on Mobile Computing

IEEE Transactions on Pattern Analysis and Machine Intelligence  
IEEE Transactions on Robotics  
IEEE Transactions on Signal Processing  
IEEE Transactions on Systems, Man and Cybernetics  
IEEE Transactions on Haptics  
IEEE/ACM Transactions on Networking  
IEEE Signal Processing Letters  
IEEE Pervasive Computing Magazine  
IEEE Journal on Selected Areas in Communications  
ACM Transactions on Algorithms  
ACM Transactions on Autonomous and Adaptive Systems  
ACM Transactions on Sensor Networks  
ACM Transactions on Embedded Computing Systems  
Artificial Intelligence  
Decision Analysis  
Discrete Applied Mathematics  
Operations Research  
Robots and Autonomous Systems  
ASCE Journal of Water Resources Planning and Management  
Nature Communications  
Proceedings of the IEEE  
Journal of the Royal Society Interface

SENIOR PROGRAM COMMITTEE MEMBERSHIP / AREA CHAIR:

Neural Information Processing Systems (NIPS) 2013-2015 Area Chair;  
International Conference on Machine Learning (ICML) 2012-2016 Area Chair;  
European Conference on Artificial Intelligence (ECAI) 2012 Area Chair;  
AAAI Conference on Human Computation (HCOMP) 2013 TPC;  
International Conference on Information Processing in Sensor Networks (IPSN) '12, '13 TPC;  
Conference on Uncertainty in Artificial Intelligence (UAI) 2012;  
AAAI Conference on Artificial Intelligence 2012, 2013, 2015 SPC;  
International Joint Conference on Artificial Intelligence (IJCAI) 2011, 2013, 2015, 2016.

PROGRAM COMMITTEE MEMBERSHIP:

ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2013-2015;  
International World Wide Web Conference (WWW) 2013;  
Conference on Neural Information Processing Systems (NIPS) Reviewer 2010, 2011, 2012;  
International Conference on Computational Sustainability (CompSust) 2010;  
International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2010;  
International Conference on Artificial Intelligence and Statistics (AISTATS) 2010, 2011;  
Conference on Uncertainty in Artificial Intelligence (UAI) 2009; 2011  
International Conference on Machine Learning (ICML) 2008, 2010, 2011;  
AAAI Conference on Artificial Intelligence 2008, 2011, 2012, 2013;  
European Conference on Artificial Intelligence (ECAI) 2010;  
European Conference on Machine Learning (ECML) 2008; 2009.

EXTERNAL CONFERENCE REVIEWING:

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2012.  
International Statistical Signal Processing Workshop (SSP) 2012;  
Conference on Decision and Control (CDC) 2012;



ACM Conference on Embedded Networked Sensor Systems (SenSys) 2011;  
Conference on Learning Theory (COLT) 2010;  
IEEE Conference on Computer Communications (INFOCOM) 2010;  
International Conference on Machine Learning (ICML) 2006, 2007;  
Conference on Neural Information Processing Systems (NIPS) 2006;  
ACM/IEEE International Conf. Information Processing in Sensor Networks (IPSN) '06, '07, '09;  
International World Wide Web Conference (WWW) 2005;  
IEEE Symposium on Foundations of Computer Science (FOCS) 2007;  
International Conference on Robotics and Applications (ICRA) 2008, 2009, 2010.

#### INVITED SEMINARS AND KEYNOTES (PAST AND UPCOMING)

Max Planck Institute for Computer Science, Saarbrücken (Distinguished Lecture Series, 04/2016)  
DALI Workshop on Learning and Optimization (Sestri Levante, 04/2016)  
SIAM Uncertainty Quantification (Lausanne, 04/2016) – Minisymposium Invited Talk  
University of California, Los Angeles (Seminar in Electrical Engineering 02/2016)  
AAAI Conference on Artificial Intelligence (Phoenix, AZ, 02/2016) – *Invited Plenary Talk*  
NIPS Bayesian Optimization Workshop (Montreal, 12/2015)  
Learning in Robotics Workshop (Tuebingen, 11/2015)  
University of Basel, Workshop on Machine Learning in the Natural Sciences (11/2015)  
Yandex Conference on Machine Learning and Applications (Berlin, 10/2015)  
University of Cambridge, Alan Turing Institute Workshop (Cambridge, 09/2015)  
Yale University (Distinguished Lecture in Institute for Network Science, 09/2015)  
MIT - MSR Colloquium (09/2015)  
Dagstuhl Seminar on Computational and Mathematical Foundations of Learning Theory (08/2015)  
Complex Systems Summer School (Lipari, 07/2015)  
Active Learning Workshop (ICML, 07/2015)  
Amazon Research Berlin (03/2015)  
University of Minnesota (Computer Science Colloquium, 02/2015)  
Institute for Mathematics and its Applications (IMA) Workshop: Convexity and Optimization (02/2015)  
AAAI Workshop on Computational Sustainability (02/2015)  
University of Basel, Computer Science Colloquium (12/2014)  
NIPS Workshop on Crowdsourcing and Machine Learning (12/2014)  
HUMANOIDS Conference Workshop on Active Learning in Robotics (11/2014)  
University of Prague, Pattern Recognition and Computer Vision Colloquium (10/2014)  
EPFL Summer Research Institute (06/2014)  
MAscotNum conference (ETH Zurich, 04/2014 – *Invited plenary talk*)  
International Workshop on Information Quality and Quality of Service for Pervasive Computing (IQ2S, Budapest, March 2014 – *Invited plenary talk*)  
Stanford University (Info-Seminar 02/2014)  
California Institute of Technology (02/2014)  
UC Berkeley Seminar (02/2014)  
UC Los Angeles (Computer Science Dept. Colloquium 02/2014)  
NIPS Workshop on Bayesian Optimization (Lake Tahoe, 12/'13)  
Cargese Workshop on Combinatorial Optimization (Corsica, 10/2013)

Machine Learning Summer School (Tuebingen, 08/2013)  
 RSS Workshop: Active Learning in Robotics (Berlin, 06/'13)  
 RSS Workshop: Nonparam. Bayesian Methods f. Space-time Modeling and Exploration (Berlin, 06/'13)  
 ETH / Universität Zürich, PermaSense Seminar (Zurich 06/2013)  
 International Conference on Integration of Artificial Intelligence (AI) and Operations Research (OR) techniques in Constraint Programming (CPAIOR, Yorktown Heights, 05/2013 – *Invited plenary talk*)  
 Bühler Top-Management Seminar (Zurich, 05/2013)  
 Max Planck Institute for Intelligent Systems, Tübingen (Intelligent Systems Colloquium, 02/2013)  
 CREST Open Workshop on Machine Learning and Search Based Software Engineering (UCL, 01/2013)  
 University of Edinburgh (01/2013)  
 ETH Zurich Optimization and Applications Seminar (11/2012)  
 Swiss Re Centre for Global Dialogue (Symposium on Big Data, Zurich, 10/2012)  
 DAGM-ÖAGM Conference (*Deutscher Mustererkennungspreis Award Lecture*, Graz, 08/2012)  
 Starting Artificial Intelligence Research Symposium, (STAIRS, Montpellier, 08/2012)  
 University of Freiburg (Intelligent Autonomous Systems group, 08/2012)  
 International Symposium on Mathematical Programming (08/2012)  
 International Workshop on the Algorithmic Foundations of Robotics (WAFR, Boston, 06/2012) – *Keynote talk*  
 TNG Big TechDay (Munich, 05/2011)  
 University of Dortmund (Guest lecture for SFB 876, 04/2012)  
 University of Zurich (Institute of Neuroinformatics Colloquium, 03/2012)  
 University College London (Centre for Computational Statistics and Machine Learning Seminar, 03/2012)  
 Microsoft Research, Cambridge (03/2012)  
 University of Oxford (Robotics Seminar, 02/2012)  
 IBM Research Rueschlikon (01/2012)  
 Google Zurich (TechTalk, 01/2012)  
 Carnegie Mellon University “Intelligence Seminar” (01/2012)  
 NIPS Workshop on “Machine Learning for Sustainability” (12/2011)  
 NIPS Workshop on “Bayesian optimization, experimental design and bandits: Theory and applications” (12/2011)  
 Qualcomm Context Aware-Computing Symposium (09/2011)  
 ABB Corporate Research (09/2011)  
 Paul Scherrer Institute (08/2011)  
 Ecole Polytechnique Fédérale de Lausanne (Summer School on Sensor and Social Networks 06/2011)  
 Massachusetts Institute of Technology (CSAIL Colloquium; 04/2011)  
 Boston University (Center for Information and Systems Engineering Seminar; 04/2011)  
 Dagstuhl Seminar (03/2011) on “Curiosity and Exploration in Robot Learning”  
 Stanford University (PAIL Seminar; 11/2010)  
 National Academy of Sciences (Kavli Frontiers of Science Symposium, Irvine, 11/2010)  
 IPAM Workshop on “Machine Reasoning” (10/2010)  
 Microsoft Research, Redmond (07/2007, 05/2008, 08/2010)  
 University of Cambridge (Machine Learning Seminar 07/2010)  
 Swiss Federal Institute for Technology (ETH) Zurich (02/2010, 07/2010)

Microsoft Research, Cambridge (Tractability workshop 07/2010)  
University of California, San Diego (05/2009, 06/2010)  
Jet Propulsion Lab (02/2009, 05/2010)  
Ecole Polytechnique Fédérale de Lausanne (06/2010)  
USC Information Sciences Institute (AI Seminar; 04/2010)  
Cornell University (AI / Sustainability Seminar; 03/2010)  
NIPS Workshop on “Adaptive Sensing, Active Learning and Experimental Design” (12/2009)  
University of California, Los Angeles (CENS Seminar; 10/2009)  
Rice University (Department Colloquium; 09/2009)  
Conference on Computational Sustainability at Cornell University (06/2009)  
Workshop on “Regression in Robotics” at RSS (06/2009)  
Technische Universität München, (04/2007, 01/2008, 03/2009)  
Johns Hopkins University (SPAR-Seminar 11/2008)  
Intel Research Seattle (05/2008)  
University of North Carolina at Chapel Hill (04/2008)  
Toyota Technological Institute at Chicago (04/2008)  
Purdue University (04/2008)  
Carnegie Mellon University Machine Learning Research Day (03/2008)  
University of Southern California (03/2008)  
University of Michigan, Ann Arbor (03/2008)  
California Institute of Technology (03/2008)  
Duke University (03/2008)  
Siemens Corporate Technology (01/2006, 01/2008)  
Fraunhofer IAIS, Sankt Augustin, (09/2007)  
Max Planck Institute for Biological Cybernetics, Tübingen (09/2007)  
Max Planck Institute for Computer Science, Saarbrücken, (09/2007)  
Boeing M&CT (07/2007)

## PUBLICATIONS

**Bibliographic indicators** (Google Scholar April 2016). Citations: 8392. h-index: 45. i10-index: 84.  
Conference publications are archival and selectively refereed in Computer Science.

### REFEREED JOURNAL ARTICLES

- [1] M. Zuluaga, A. Krause, M. Püschel. “ $\epsilon$ -PAL: An Active Learning Approach to the Multi-Objective Optimization Problem”. To appear in the Journal of Machine Learning Research (JMLR)
- [2] B. Mirzasoleiman, A. Karbasi, R. Sarkar, A. Krause. “Distributed Submodular Maximization”. To appear in the Journal of Machine Learning Research (JMLR)
- [3] P. Trautman, J. Ma, R. Murray, A. Krause “Robot Navigation in Dense Human Crowds: Statistical Models and Experimental Studies of Human Robot Cooperation”. International Journal of Robotics Research (IJRR), vol. 34 no. 3 pp. 335-356, March 2015 *Link: <http://dx.doi.org/10.1177/0278364914557874>*
- [4] T. Desautels, A. Krause, J. Burdick. “Parallelizing Exploration-Exploitation Tradeoffs in Bayesian Global Optimization”. Journal of Machine Learning Research (JMLR) vol. 15, pp 3873-3923, Dec 2014 *Link: <http://jmlr.org/papers/v15/desautels14a.html>*
- [5] J. Binney, A. Krause, G. Sukhatme. “Optimizing Waypoints for Monitoring Spatiotemporal Phenomena”. International Journal on Robotics Research (IJRR) July 2013 vol. 32 no. 8 873-888 *Link: <http://dx.doi.org/10.1177/0278364913488427>*
- [6] P. Romero, A. Krause, F. Arnold. “Navigating the protein fitness landscape with Gaussian processes”. Proceedings of the National Academy of Sciences (PNAS), Published online before print on December 31, 2012. PNAS January 15, 2013 vol. 110 no. 3 *Link: <http://dx.doi.org/10.1073/pnas.1215251110>*
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- [9] N. Srinivas, A. Krause, S. Kakade, M. Seeger. “Information-Theoretic Regret Bounds for Gaussian Process Optimization in the Bandit Setting”. IEEE Transactions on Information Theory, Vol. 58 Issue 5, 2012, pages 3250-3265 *Link: <http://dx.doi.org/10.1109/TIT.2011.2182033>*.
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#### REFEREED PUBLICATIONS AT SELECTIVE CONFERENCES

- [28] M. Lucic, O. Bachem, A. Krause. "Linear-time Outlier Detection via Sensitivity". To appear in International Joint Conference on Artificial Intelligence (IJCAI) 2016 *Acceptance rate: 25%*
- [29] H. Abdelrahman, F. Berkenkamp, J. Poland, A. Krause. "Bayesian Optimization for Maximum Power Point Tracking in Photovoltaic Power Plants". To appear in European Control Conference (ECC) 2016
- [30] H. Tyagi, A. Kyrillidis, B. Gaertner, A. Krause. "Learning Sparse Additive Models with Interactions in High Dimensions". To appear in Proc. International Conference on Artificial Intelligence and Statistics (AISTATS) 2016 *Accepted as oral presentation (7% of submissions)*
- [31] S. Tschitschek, J. Djolonga, A. Krause. "Learning Probabilistic Submodular Diversity Models Via Noise Contrastive Estimation. To appear in Proc. International Conference on Artificial Intelligence and Statistics (AISTATS) 2016 *Acceptance rate: 31%*
- [32] M. Lucic, O. Bachem, A. Krause. "Strong Coresets for Hard and Soft Bregman Clustering with Applications to Exponential Family Mixtures". To appear in Proc. International Conference on Artificial Intelligence and Statistics (AISTATS) 2016 *Acceptance rate: 31%*
- [33] A. Singla, S. Tschitschek, A. Krause. "Noisy Submodular Maximization via Adaptive Sampling with Applications to Crowdsourced Image Collection Summarization". To appear in Conference on Artificial Intelligence (AAAI) 2016 *Acceptance rate: 26%*
- [34] O. Bachem, M. Lucic, H. Hassani, A. Krause. "K-MC<sup>2</sup>: Approximate K-Means++ in Sublinear Time". To appear in Conference on Artificial Intelligence (AAAI) 2016 *Acceptance rate: 26%*
- [35] F. Berkenkamp, A. Schoellig, A. Krause. "Safe Controller Optimization for Quadrotors with Gaussian Processes". In Proc. of the International Conference on Robotics and Automation (ICRA), 2016 *Acceptance rate: 34.7%*
- [36] V. Raychev, P. Bielik, M. Vechev, A. Krause. "Learning Programs from Noisy Data". To appear in Proc. ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL) 2016
- [37] E. Schulz, Q. Huys, D. Bach, M. Speekenbrink, A. Krause. "Better safe than sorry: Risky function exploitation through safe optimization". To appear in Proc. 38th Annual Meeting of the Cognitive Science Society (CogSci) 2016 *Acceptance rate: 73%*
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- [39] A. Gotovos, H. Hassani, A. Krause “Sampling from Probabilistic Submodular Models”. In Proc. Neural Information Processing Systems (NIPS) 2015 *Accepted as oral presentation (1% of submissions)*
- [40] J. Zhang, J. Djolonga, A. Krause. “Higher-Order Inference for Multi-class Log-supermodular Models”. To appear in Proc. International Conference on Computer Vision (ICCV) 2015
- [41] B. Nushi, A. Singla, A. Gruenheid, E. Zamanian, A. Krause, D. Kossmann. “Crowd Access Path Optimization: Diversity Matters”. In Proc. AAAI Conference on Human Computation & Crowdsourcing (HCOMP) 2015 *Acceptance rate: 30%*
- [42] A. Singla, E. Horvitz, P. Kohli, A. Krause, D. Kossmann. “Learning to Hire Teams”. In Proc. AAAI Conference on Human Computation & Crowdsourcing (HCOMP) 2015 *Accepted as short paper.*
- [43] H. Vanchinathan, A. Marfurt, C-A. Robelin, D. Kossmann, A. Krause. “Discovering Valuable Items in Massive Data”. In Proc. ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2015 *Acceptance rate: 19%*
- [44] Y. Chen, H. Hassani, A. Karbasi, A. Krause “Sequential Information Maximization: When is Greedy Near-Optimal?”. In Proc. Conference on Learning Theory (COLT) 2015 *Acceptance rate: 40%*
- [45] J. Djolonga, A. Krause. “Scalable Variational Inference in Log-supermodular Models”. In Proc. International Conference on Machine Learning (ICML) 2015 *Acceptance rate: 26%*
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- [47] O. Bachem, M. Lucic, A. Krause. “Coresets for Nonparametric Estimation - the Case of DP-Means”. In Proc. International Conference on Machine Learning (ICML) 2015 *Acceptance rate: 26%*  
 Link: <http://las.ethz.ch/files/bachem15dpmeans.pdf>
- [48] Y. Sun, A. Singla, D. Fox, A. Krause “Building Hierarchies of Concepts via Crowdsourcing”. In Proc. International Joint Conference on Artificial Intelligence (IJCAI) 2015 *Acceptance rate: 29%* Link: <http://las.ethz.ch/files/sun15building.pdf>
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- [50] A. Singla, E. Horvitz, P. Kohli, R. White, A. Krause “Information Gathering in Networks via Active Exploration”. In Proc. International Joint Conference on Artificial Intelligence (IJCAI) 2015 *Acceptance rate: 29%* Link: <http://las.ethz.ch/files/singla15netexp.pdf>
- [51] L. Heng, A. Gotovos, A. Krause, M. Pollefeys. “Efficient Visual Exploration and Coverage with a Micro Aerial Vehicle in Unknown Environments”. Proc. IEEE International Conference on Robotics and Automation (ICRA) 2015 *Acceptance rate: 41%* Link: <http://www.inf.ethz.ch/personal/marc.pollefeys/pubs/HengICRA15.pdf>
- [52] M. Lucic, M. Ohannessian, A. Karbasi, A. Krause. “Tradeoffs for Space, Time, Data and Risk in Unsupervised Learning”. Proc. International Conference on Artificial Intelligence and Statistics (AISTATS) 2015 *Acceptance rate: 27%. Best Student Paper Award (1 out of 442 submissions)*  
 Link: <http://las.ethz.ch/files/lucic14tradeoffs.pdf>
- [53] A. Singla, M. Santoni, G. Bartók, P. Mukerji, M. Meenen, A. Krause. “Incentivizing Users for Balancing Bike Sharing Systems”. Proc. Conference on Artificial Intelligence (AAAI) 2015 *Acceptance rate: 26%*  
*One of 10 papers selected for AAAI 2015 Open House*

- [54] Y. Chen, S. Javdani, A. Karbasi, J.A. Bagnell, S. Srinivasa, A. Krause. “Submodular Surrogates for Value of Information”. Proc. Conference on Artificial Intelligence (AAAI) 2015 *Acceptance rate: 26%*
- [55] B. Mirzasoleiman, A. Badanidiyuru, A. Karbasi, J. Vondrak, A. Krause. “Lazier than Lazy Greedy”. Proc. Conference on Artificial Intelligence (AAAI) 2015 *Acceptance rate: 26%*
- [56] V. Raychev, M. Vechev, A. Krause. “Predicting Program Properties from Big Code”. Proc. ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL) 2015 *Acceptance rate: 23%*
- [57] J. Djolonga, A. Krause. “From MAP to Marginals: Variational Inference in Bayesian Submodular Models”. Proc. Neural Information Processing Systems (NIPS) 2014 *Acceptance rate: 25%*
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- [59] H. Vanchinathan, G. Bartók, A. Krause. “Efficient Partial Monitoring with Prior Information”. Proc. Neural Information Processing Systems (NIPS) 2014 *Acceptance rate: 25%*
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- [64] G. Hitz, A. Gotovos, F. Pomerleau, M.E. Garneau, C. Pradalier, A. Krause, R. Siegwart. “Fully Autonomous Focused Exploration for Robotic Environmental Monitoring”. In Proc. International Conference on Robotics and Automation (ICRA) 2014 *Acceptance rate: 48%*  
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- [72] M. Faulkner, A. Liu, A. Krause “A Fresh Perspective: Learning to Sparsify for Detection in Massive Noisy Sensor Networks”. In Proc. ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN) 2013. *Acceptance rate: 21%. Best Paper Award (1 out of 115 submissions)*  
*Link: <http://las.ethz.ch/files/faulkner13fresh.pdf>*
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- [75] P. Trautman, J. Ma, R. Murray, A. Krause “Robot Navigation in Dense Human Crowds: the Case for Cooperation”. In Proc. International Conference on Robotics and Automation (ICRA) 2013 *Nominee for best Robotics Conference Paper Award. Acceptance rate: 39%*  
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*Link: <http://las.ethz.ch/files/feldman11scalable.pdf>*

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- [84] A. Krause, A. Roper, D. Golovin. “Randomized Sensing in Adversarial Environments”. In Proc. International Joint Conference on Artificial Intelligence (IJCAI), 2011. *Accepted as talk and poster (17% of submissions)* Link: <http://las.ethz.ch/files/krausel1randomized.pdf>
- [85] M. Faulkner, R. Chandy, J. Krause, M. Olson, K. M. Chandy, A. Krause “The Next Big One: Detecting Earthquakes and other Rare Events from Community-based Sensors”. In Proc. International Conference on Information Processing in Sensor Networks (IPSN), 2011. *Acceptance rate: 21%* Link: <http://las.ethz.ch/files/faulkner11next.pdf>
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- [90] D. Golovin, A. Krause. “Adaptive Submodularity: A New Approach to Active Learning and Stochastic Optimization”. Proc. of the International Conference on Learning Theory (COLT) 2010. Extended version: arXiv:1003.3967v1 *Acceptance rate: 31%* Link: <http://las.ethz.ch/files/golovin10adaptive.pdf>
- [91] M. Gomez Rodriguez, J. Leskovec, A. Krause “Inferring Networks of Diffusion and Influence”. Proc. of the ACM Conference on Knowledge Discovery in Databases (KDD) 2010. *Acceptance rate: 13%. Best Research Paper Award Honorable Mention* Link: <http://las.ethz.ch/files/gomezrodriguez10inferring.pdf>
- [92] N. Srinivas, A. Krause, S. Kakade, M. Seeger. “Gaussian Process Optimization in the Bandit Setting: No Regret and Experimental Design”. Proc. of the International Conference on Machine Learning (ICML) 2010. *Acceptance rate: 26%* Link: <http://las.ethz.ch/files/srinivas10gaussian.pdf>

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