
Curriculum Vitae - Max Welling

Max Welling Email: m.welling@uva.nl
Born October 22, 1968
Informatics Institute URL: <http://www.ics.uva.nl/~welling/>
University of Amsterdam Phone: +31 20 525 8256
Science Park 904 Room C3.259
Amsterdam, 1098 XH Netherlands

May 31, 2019

Education

1987-1993 Utrecht University Utrecht, Netherlands
BA physics Supervisor: Prof. G. 't Hooft
Thesis: Asymptotically Flat Universes have Positive Total Energy.
Date received: Aug.30 1993

1993-1998 Utrecht University Utrecht, Netherlands
PhD physics Supervisor: Prof. G. 't Hooft
Thesis: Gravity in 2+1 Dimensions.
Date received: Jan.19 1998

Employment

1998-2000 Caltech, Pasadena, USA
Computational Vision Lab
Postdoctoral Fellow
Supervisor: Prof. P. Perona

2000-2001 University College London, UK
Gatsby Computational Neuroscience Unit
Postdoctoral Fellow
Supervisor: Prof. G.E. Hinton

2001-2003 University of Toronto, Canada
Department of Computer Science
Postdoctoral Fellow
Supervisor: Prof. G.E. Hinton

2003- 2013 UC Irvine, USA
School of Information and Computer Science
Assistant Professor (2003-2006),
Associate Professor (2006-2008),
Full Professor (2008-2013), joint appointment in Dept. Statistics

2007-2008 Radboud University, Nijmegen, Netherlands
Department of Biophysics
Visiting Professor on sabbatical from UC Irvine

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| 2012-now | University of Amsterdam (UvA), Netherlands “Hoogleraar” (Full Professor and Research Chair) |
| 2017-now | Qualcomm Technologies Vice President Technologies |

Appointments

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| 2006-2012 | UC Irvine, USA School of Information and Computer Science Associate Director Center for Machine Learning and Intelligent Systems |
| 2013-2016 | University of Amsterdam Director of the Master AI |
| 2015-now | Neural Information Processing Systems (NIPS) Member of the Executive Board |
| 2015-now | University of Amsterdam Board member of the Amsterdam Data Science (ADS) |
| 2015-now | Canadian Institute of Advanced Research (CIFAR) Senior Fellow |
| 2015-now | Qualcomm-UvA QUVA Lab Co-Director |
| 2016-now | Bosch-UvA DELTA Lab Co-Director and Chair |
| 2016-2017 | University of Amsterdam Member of the Senate |
| 2017-now | Member International Scientific Advisory Committee (ISAC) Advisory body for the Pan-Canadian Artificial Intelligence Program |
| 2018-now | Innovation Center for AI (ICAI) Co-founder and board member |
| 2018-now | European Lab for Learning and Intelligent Systems (ELLIS) Co-founder and board member |

Co-Founder Companies

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| 2013-2017 | Scyfer | Amsterdam, NL |
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Consultancy

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| 2008-2009 | Julius Finance/Benchmark Solutions, New York USA Member Technical Advisory Board |
| 2010-2011 | M&M Trading, Newport Beach Consultant |

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| 2010-2012 | Identity Metrics, Aliso Viejo Consultant |
| 2015-2017 | Stratified Medical, London, UK Consultant |

Publications

For my publication list see below and:
<https://scholar.google.com/citations?user=8200InoAAAAJ&hl=en>
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Media

2 feb. 2013 NRC Opinie
 “Open access wel degelijk belangrijk in economie”
 18 juni 2013 NRC Opinie
 “Mijn data mogen ze hebben hoor”
 29 juni 2013 Pavlov
 “Nergens meer onbespied” (Radio)
 4 feb. 2014 De Kennis van Nu
 Interview over “Lerende Machines” (Radio)
 6 sep. 2014 Folia / Parool
 “Big data hoeven privacy niet aan te tasten”
 26 sep. 2014 Computable
 “Hoe ontrafelen we ‘wat’ en ‘waar’ in videobeelden?”
 22 dec. 2014 ASTRON Newsletter
 “When saving all the data captured by the antennas is simply not an option”
 10 jan. 2015 Parool
 ”Een computer met een mensenbrein”
 22 jan. 2015 I/O Magazine
 “Natuurlijke en kunstmatige intelligentie: dubbel zo slim”
 23 jan. 2015 De Ingenieur
 “Lerende computer-neuronen”
 25 juni 2015 Interview in NRC-Q
 “Waarom Facebook en Google jouw brein willen namaken”
 7 juli 2015 Interview in Het Financieel Dagblad
 “Afgestudeerde econometrist heeft de banen nu voor het uitzoeken”
 28 juli 2015 19:30 RTL Nieuws
 Interview over Gevaren AI
 22 aug. 2015 Artikel in Het Financieel Dagblad
 “Flexibel werken en voor ieder een basisinkomen”
 26 sep. 2015 Artikel in Het Financieel Dagblad
 “Deep Learning maakt ons bestaan smarter en kwetsbaarder”
 24 dec. 2015 VPRO Marathoninterview
 door Jelle Brandt Corstius
 Mar 9 2016 NRC Handelsblad (interview door Peter van Ammelrooy)
 “Google-computer verslaat wereldkampioen go”
 30 apr. 2016 Interview NRC
 ”En toen ging de computer zelf leren” (interview door Bennie Mols)
 31 may 2016 Interview BNR Radio
 sept 2016 - now Column Financieel Dagblad
 Data Domino (once a month)

sept. 2016 ICT&Health
 “Een pitbull waakt voor het laaghangend fruit”
 Feb. 20 2017 Financieel Dagblad
 “Op zoek naar het Big Data-ecosysteem in Amsterdam”
 Apr. 6 2017 Financieel Dagblad
 “UvA-onderzoek naar kunstmatige intelligentie trekt wereldspelers”
 May 5 2017 NRC Handelsblad (quote in artikel van door Bennie Mols)
 “Pas op: vooringenomen computer”
 Jul 13 2017 Computable
 “NL-professor leidt Microsoft-onderzoek AI in zorg”
 Aug. 16 2017 Financieel Dagblad
 “Qualcomm koopt Amsterdamse start-up Scyfer”
 Nov. 07 2017 Folia
 “UvA en Bosch werken samen aan machines die zichzelf dingen leren”
 Nov. 03 2017 Onderzoek Nederland
 Nov 24 201f NRC
 Interview in NRC (by Mark Hijink)
 Nov 27 2017 Pakhuis de Zwijger
 Interview met Jelle Brandt-Corstius n.a.v. Robo Sapiens
 May 23 2018 OnQ Blog
 Interview: “Dr. Max Welling on how AI will impact the world, now and in the future”
 Sep. 12 2018 Nationale AI Cursus
 Interview: Deep Learning in de Zorg
 Nov. 2018 New Scientist
 Interview in Special Issue on Artificial Intelligence
 Nov. 10 2018 Inscience
 “Bedrijven hebben hart voor onderzoek”
 Jan. 29 2019 Bits & Chips
 Interview: “Talent is het schaarse goed in de ai-wereld”
 Jan. 16 2019 DWDD University, De Toekomst
 Televisie optreden met Robbert Dijkgraaf
 Feb. 09 2019 Interview Trouw
 “Robots kunnen over duizend jaar alles beter dan wij”
 Feb.11 2019 BNR Newsradio
 Artificial Intelligence
 Feb.11 2019 NRC Live
 “Winnen met AI, maar hoe dan?”
 Mrt.14 2019 Gigaom
 Voices in AI, Episode 82: A Conversation with Max Welling
 Mrt.14 2019 Tivoli
 Mrt 27 2019 Spui 25 Amsterdam
 Interview New Scientist: Antwoorden op de grote vragen
 Apr.08 2019 Science & Cocktails
 Apr.11 2019 NRC Live
 Apr.18 2019 Museum Nacht Leiden
 May 20 2019 TWIML&AI
 “Gauge Equivariant CNNs, Generative Models, and the Future of AI with Max Welling”

Grants

1998-2000 Caltech Vision Lab Pasadena, USA
 Sloan Postdoctoral Fellowship
 \$21,794 annually

3/15/05-2/28/10 NSF-Career
IIS 0447903, \$450K

8/1/05-7/31/08 NSF Collaborative Research
IIS-0535278 \$162,805

5/1/06-9/30/09 ONR-MURI
\$185K

Aug. 2007 Nijmegen Netherlands
21,780 euro Dutch Science Foundation (NWO)

Dec. 2008 Proposal for Collaborative Research Initiation Award (CRIA)
UC Irvine
\$13,181

Sep. 2009 NSF PRISM Grant
IIS-0928427 \$1,950,568

Sep. 2009 NSF Collaborative Grant
IIS-0914783, \$300K

Sept. 2009 NIH/NCI GO Grant
1RC2CA148493-01: \$2,033,332

Sept. 2010 NSF Collaborative Grant
IIS-1018433, \$450K

Sept. 2012 NSF Grant
IIS-1216045, \$500K

May 2013 NWO Grant - Vrije Competitie
230K euro

June 2013 Yahoo! Faculty Award
\$20K

June 2014 Facebook Research Award
50K euro

May 2014 NWO Grant- Big Bang Big Data
230K euro

Sept 2014 NWO Grant- Natural AI
217K euro

April 2015 Google faculty Research Award
\$200K

April 2015 NWO KIEM
94K euro

June 2015 SAP Lab
1 PhD + 1 Postdoc for 4 years

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| Sept 2015 | TNO Sponsored Research |
| 204K euro | |
| Sept 2015 | QUVA Lab |
| 12 FTE for 4 years | |
| Oct. 2016 | Bosch Lab |
| 10 FTE for 4 years | |
| Dec. 2016 | STW Perspectief |
| 2 FTE for 4 years | |
| Sep. 2016 | Philips Lab |
| 2 FTE for 4 years | |
| Sep. 2016 | Marie Curie Sklodowska Grant |
| 1 FTE for 4 years | |
| Jun. 2017 | MSR Cambridge |
| 500k euro | |
| Sep. 2017 | ORTEC |
| 1 FTE for 4 years | |
| Apr. 2017 | CIFAR |
| 1 FTE for 4 years | |
| Sep. 2018 - now | CIFAR |
| 26k euro annually | |
| Dec. 2019 | STW Perspectief |
| 2 FTE for 4 years | |

Awards

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| 2005 | NSF Career Award |
| 2008 | Dean's Mid-Career Award for Research |
| 2010 | ECCV Koenderink Prize |
| 2012 | ICML Best Paper Award |
| 2016 | ParLearning Best Paper Award |
| 2018 | ICLR Best Paper Award |
| 2018 | ECWS Student Best Paper Award |
| 2019 | ICML Honorable Mention |

Memberships

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| Dec. 2010 | Member of "Neural Computation and Adaptive Perception" Program Canadian Institute for Advanced Research |
| Apr. 2015 | Fellow of "Learning in Machines and Brains" Program Canadian Institute for Advanced Research |

Professional Service

Executive Board:

2015-now Neural Information Processing Systems (NIPS)

Associate Editor in Chief:

2011-2015 IEEE Transactions on Pattern Analysis and Machine Intelligence

General Chair:

General Chair, Conference on Neural Information Processing Systems, NIPS (2014)

General Chair, Medical Imaging and Deep Learning, MIDL (2018)

Program Chair:

Program Chair, Int'l Conf. Artificial Intelligence and Statistics, AISTATS (2009)

Program Chair, Conference on Neural Information Processing Systems, NIPS (2013)

Program Chair, European Conference on Computer Vision, ECCV (2016)

Conference Chair:

Tutorials Chair, International Conference on Machine Learning, ICML (2007)

Senior Advisory Board, Int'l Conf on Artificial Intelligence and Statistics, AISTATS (2010)

Tutorials Chair, Conference on Neural Information Processing Systems, NIPS (2011)

Workshop Organizer:

Inference and Learning, Gatsby Unit, UCL (2001)

Propagation Algorithms on Graphs with Cycles: Theory and Applications NIPS (2002)

First Southern California Workshop on Machine Learning, SoCaML (2011)

ABC in Montreal, NIPS (2014)

Deep Learning Workshop, ICML (2015)

Deep Learning Symposium, NIPS (2015)

Scalable Monte Carlo Methods for Bayesian Analysis of Big Data, NIPS (2015)

Workshop on Data-Efficient Machine Learning, ICML (2016)

Symposium on Medical Image Analysis, UvA Feb. 12, 2016

Symposium on Medical Image Analysis, UvA Sep. 19, 2016

CIFAR Workshop on Medical Image Analysis, CASA400, Oct. 07 2016

Workshop on Bayesian Deep Learning, NIPS 2016

Workshop on Bayesian Deep Learning, NIPS 2017

Approximate Bayesian Inference, NIPS 2017

Compact Deep Neural Networks with industrial applications, Neurips 2018

Bayesian Deep Learning, Neurips 2018

Learning and Reasoning with Graph-Structured Representations, ICML 2019

Joint Workshop on On-Device Machine Learning

& Compact Deep Neural Network Representations (ODML-CDNNR), ICML 2019

Theoretical Physics for Deep Learning, ICML 2019

Associate (Action) Editor:

2004-2007 Neurocomputing

2007-2009 Journal of Computational and Graphical Statistics

2007-2011 IEEE Transactions on Pattern Analysis and Machine Intelligence

Member Editorial Board:

2009- Journal Machine Learning Research

2010- Machine Learning Journal

2014- Neural Computation

Senior Program Committee (a.k.a. area chair):

Conference on Uncertainty in Artificial Intelligence (2006)
International Conference on Machine Learning (2008)
Conference on Neural Information Processing Systems (2008)

**PhD
Committee**

| | | |
|--------------|-------------------------|---------------------------------|
| Nov.22 2005 | Sergey Kirshner | UC Irvine |
| Jan.06 2006 | Bozhena Bidyuk | UC Irvine |
| Apr.30 2007 | Alex Holub | EE Caltech |
| Jun.14 2007 | Seyoung Kim | UC Irvine |
| Dec.2 2007 | Claudio Fanti | EE Caltech |
| Mar.3 2008 | Edward Meeds, | University of Toronto |
| Jun.23 2009 | Laurens van der Maaten, | Tilburg University, Netherlands |
| May 29 2009 | Vibhav Gogate | UC Irvine |
| May 29 2009 | Chaitanya Chemudugunta | UC Irvine |
| Jun.29 2009 | Peter Carbonetto | U. British Columbia, Canada |
| Apr.26 2010 | Ian Porteous | UC Irvine (chair) |
| Jan.13 2011 | Marco Andreetto | EE Caltech |
| Jan.18 2011 | Ryan Gomes | EE Caltech |
| Jul.18 2012 | Julian Yarkony | UC Irvine |
| Oct.25 2012 | Mohammad Azar | Radbout U. Nijmegen |
| Mrt. 14 2013 | Rick Quax | UvA |
| Apr. 18 2013 | Jafar Tanha | UvA |
| May10 2013 | Yutian Chen | UC Irvine (chair) |
| May 28 2013 | Katja Hofmann | UvA |
| May 31 2013 | Trung Kien | UvA |
| Apr.10 2014 | Andrew Gelfand | UCI |
| Apr.14 2014 | Levi Boyles | UCI (chair) |
| Sep.3 2014 | Alexander Pyayt | UvA |
| Sep.3 2014 | Efstratios Gavves | UvA |
| Oct.28 2014 | Martijn Liem | UvA |
| Dec.02 2014 | Anoop Korattikara | UCI (chair) |
| Mar.24 2015 | Maria-Hendrike Peetz | UvA |
| Jun.10 2015 | Veronika V. Cheplygina | TUD |
| Aug. 21 2015 | Sungjin Ahn | UC Irvine (chair) |
| Oct. 7 2015 | Benigno Uria | University of Edinburgh |
| Dec. 4 2015 | Julian Kooij | UvA |
| May 24 2016 | Diederik Roijers | UvA (chair) |
| May 27 2016 | Anne Schuth | UvA |
| June 3 2016 | Phong Le | UvA |
| Nov. 01 2016 | Kevin Swersky | U. Toronto |
| Nov 30 2016 | Ninghang Hu | UvA |
| Oct 01 2016 | Silvia Pintea | UvA |
| Oct 01 2016 | Ran Tao | UvA |
| May 11 2017 | J.M. Wolterink | Utrecht University |
| Oct. 25 2017 | Diederik Kingma | UvA (chair) |
| Nov. 17 2017 | Christophe Van Gysel | UvA |
| Dec.13 2017 | Omri Har-Shemesh | UvA |
| Apr. 20 2018 | Matthijs Spaan | UvA |
| June 19 2018 | Laurent Dinh | U. Montreal |
| July 3 2018 | Jorn Jacobsen | UvA |

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| July 3 2018 | Arnoud Setio | RUN |
| Nov 29 2018 | Casper Kaae Sønderby | University of Copenhagen |
| Nov 30 2018 | Ke Tran | UvA |
| Jan 25 2019 | Yash Satsangi | UvA (chair) |
| Mrt 15 2019 | Akash Srivastava | University of Edinburgh |

Publications

Physics-Journal

- J1 M. Welling, *Gravity in 2+1 dimensions as a Riemann-Hilbert problem*, 1996, Class. Quant. Grav. 13, pp. 653.
- J2 M. Welling and M. Bijlsma, *Pauli-Lubanski scalar in the polygon approach to 2+1 dimensional gravity*, 1996, Class. Quant. Grav. 13, pp. 1769.
- J3 M. Welling, *The torus universe in the polygon approach to 2+1 dimensional gravity*, 1997, Class. Quant. Grav. 14, pp. 929.
- J4 M. Welling, *Two particle quantum mechanics in 2+1 gravity using non-commuting coordinates*, 1997, Class. Quant. Grav. 14, pp. 3313.
- J5 M. Welling, *Winding solutions for the two particle system in 2+1 gravity*, 1998, Class. Quant. Grav. 15, pp. 613.
- J6 M. Welling, *Explicit solutions for point particles and black holes in spaces of constant curvature in 2+1 dimensional gravity*, 1998, Nucl. Phys. B pp. 515.
- J7 H.J. Matschull and M. Welling, *Quantum mechanics of a point particle in 2+1 dimensional gravity*, 1998, Class. Quant. Grav. 15, pp. 2981.

Physics-Conference

- C1 M. Welling, *Some approaches to 2+1 dimensional gravity coupled to point particles*, 1996, Proceedings of the 7th summer school: Theoretical and Mathematical Physics, Kazan, Russia.
- C2 M. Welling, *One particle quantum mechanics in 2+1 gravity using non commuting coordinates*, 1997, Nucl. Phys. B (Proc. Suppl.) 57, pp. 346.

Machine Learning-Journal

- J8 M. Welling and M. Weber, *A constrained EM algorithm for independent component analysis*, 2001, Neural Computation 13 (3), pp. 677-689.
- J9 M. Welling and M. Weber, *Positive tensor factorization*, 2001, Pattern Recognition Letters 22 (12), pp. 1255-1261.
- J10 M. Welling and Y.W. Teh, *Approximate inference in Boltzmann machines*, 2003, Artificial Intelligence 143 (1), pp.19-50.
- J11 Y.W. Teh, M. Welling, S. Osindero and G. Hinton, *Energy-based models for sparse over-complete representations*, 2003, Journal for Machine Learning Research 4 - Special Issue on ICA, pp.1235-1260.

- J12 M. Welling and Y.W. Teh, *Linear response algorithms for approximate inference in graphical models*, 2004, Neural Computation 16 (1), pp.197-221.
- J13 M. Welling, R.S. Zemel and G.E. Hinton, *Probabilistic Sequential Independent Component Analysis*, 2004, IEEE Transactions on Neural Networks 15(4), pp.838-849.
- J14 S. Osindero, M. Welling and G.E. Hinton, *Topographic Product Models Applied to Natural Scene Analysis*, 2005, Neural Computation 18(2), pp.381-414.
- J15 G. Hinton, S. Osindero, M. Welling and Y.W. Teh, 2006, *Unsupervised Discovery of Non-Linear Structure Using Contrastive Back-Propagation*. Cognitive Science 30(4), pp.725-731.
- J16 A. Holub, M. Welling and P. Perona, *Hybrid Generative-Discriminative Visual Categorization*, 2008, International Journal of Computer Vision 77(1-3), pp.239-258.
- J17 K. Kurihara and M. Welling, *Bayesian K-Means as a "Maximization-Expectation" Algorithm*, 2008, Neural Computation 21(4), pp.1-28.
- J18 S. Cole, M. Welling, R. Dioso-Villa and R. Carpenter, 2008, *Beyond the Individuality of Fingerprints: A Measure of Simulated Computer Latent Print Source Attribution Accuracy*, Law, Probability & Risk 7, pp.165-189.
- J19 D. Newman, A. Asuncion, P. Smyth, M. Welling, 2009, *Distributed Algorithm for Topic Models*, Journal Machine Learning Research 10, 2009, pp.1801-1828.
- J20 A. Asuncion, P. Smyth and M. Welling, 2010, *Asynchronous Distributed Estimation of Topic Models for Document Analysis*, Statistical Methodology (published online - <http://dx.doi.org/10.1016/j.stamet.2010.03.002>).
- J21 A. Kume and M. Welling, 2010, *Maximum-likelihood estimation for the offset normal shape distributions using EM*, Journal of Computational and Graphical Statistics, Vol. 19, No. 3: pp. 702173.
- J22 Y. Zhang, L. Bao, S.H. Yang, M. Welling and D. Wu , 2010, *Localization Algorithms for Wireless Sensor Retrieval*, The Computer Journal, Special Issue on Algorithms, Protocols, and Future Applications of Wireless Sensor Networks, publisher: Oxford Journals, 2010 (published online) doi: 10.1093/comjnl/bxq001.
- J23 E. Bart, P. Perona, M. Welling, 2009, *Unsupervised organization of image collections: taxonomies and beyond*, IEEE Transactions on Pattern Analysis and Machine Intelligence 33(11), pp. 2302-2315.
- J24 C. Sminchisescu and M. Welling, 2011, *Generalized Darting Monte-Carlo*, Pattern Recognition, 44 (10-11): 2738-2748
- J25 X. Zhu, M. Welling, F. Jin and J. Lowengrub, 2012, *Predicting Simulation Parameters of Biological Systems using a Gaussian Process Model*, Statistical Analysis and Data Mining 5 (6), pp. 506-522 (Special Issue: Best Papers from the SLDM Competition).
- J26 Y. Chen, L. Bornn, N. de Freitas, M. Eskelin, J. Fang, M. Welling, 2015, *Herded Gibbs Sampling*, Journal Machine Learning Research (accepted).
- J27 T. Meeds, M. Chiang, M. Lee, O. Cinquin, J. Lowengrub, M. Welling, 2015, *POPE: Post Optimization Posterior Evaluation of Likelihood Free Models*, BMC Bioinformatics 2015, 16:264 doi:10.1186/s12859-015-0658-1.
- J28 M. Chiang, A. Cinquin, A.Paz, E. Meeds, M.Welling, O. Cinquin, 2015, *Control of Caenorhabditis elegans germ-line stem-cell cycling speed meets requirements of design to minimize mutation accumulation*, BMC Biology 2015, 13:51 doi:10.1186/s12915-015-0148-y.

- J29 T. Meeds, R. Hendriks, S. al Faraby, M. Bruntink, M. Welling, *MLitB: Machine Learning in the Browser*, PeerJ Computer Science 1:e11 <https://dx.doi.org/10.7717/peerj-cs.11>.
- J30 A. Korattikara, Y. Chen, M. Welling, 2015, *Sequential Tests for Large Scale Learning*, Neural Computation 24, p.1-26, 2015.
- J31 Y. Chen, M. Welling, Herding as a Learning System with Edge-of-Chaos Dynamics, *Special Issue on Perturbations, Optimization and Statistics* Eds. T. Hazan, G. Papandreou, D. Tarlow; 2016.
- J32 ERCIM News, M. Welling, *Marrying Graphical Models with deep Learning*, nr. 107, Oct. 2016.
- J33 A. Eck, E.F.J. de Groot, T.G.J. de Meij, M. Welling, P.H.M Savelkoul, A.E. Budding, *Robust Microbiota-Based Diagnostics for Inflammatory Bowel Disease*, J. Clin. Microbiol., doi:10.1128/JCM.00162-17, 2017.
- J34 T. Adel, T. Cohen, M. Caan, M. Welling, *3D scattering transforms for disease classification in neuroimaging*, NeuroImage: Clinical 14 (2017) p. 506517.
- J35 A. Eck, L.M. Zintgraf, E.F.J. de Groot, T.G.J. de Meij, T.S. Cohen, P.H.M. Savelkoul, M. Welling, A.E. Budding, *Interpretation of microbiota-based diagnostics by explaining individual classifier decisions*, BMC bioinformatics vol. 18, issue 1, pp. 441, 2017
- J36 K. Lning, P. Putzky, J. Sonke, L. Renemane, M.W.A. Caan, M. Welling, *Recurrent inference machines for reconstructing heterogeneous MRI data*, Medical Image Analysis 53, 2019, p.64-78.
- J37 G. Bertone, M.P. Deisenroth, J.S. Kim, S. Liem, R. Ruiz de Austri, M. Welling, *Accelerating the BSM Interpretation of LHC Data with Machine Learning*, Physics of the Dark Universe, 2019.

Machine Learning-Conferences (peer reviewed)

- C3 M. Weber, M. Welling and P. Perona, *Unsupervised learning of models for visual object class recognition*, 1999, Proceedings of the 6th Annual Joint Symposium on Neural Computation, JNSC99, Pasadena, pp.153-160.
- C4 M. Welling and M. Weber, *Independent component analysis of incomplete data*, 1999, Proceedings of the 6th Annual Joint Symposium on Neural Computation, JNSC99, Pasadena, pp.162-168.
- C5 M. Weber, M. Welling and P. Perona, *Towards automatic discovery of object categories*, 2000, Proc. IEEE Comp. Soc. Conf. Comp. Vis. and Pat. Rec., CVPR2000, Hilton Head Island, pp.101-108.
- C6 M. Weber, W. Einhauser, M. Welling and P. Perona, *Viewpoint-invariant learning and detection of human heads*, 2000, Proc. 4th Int. Conf. Autom. Face and Gesture Rec., FG2000, Grenoble, pp.20-27.
- C7 M. Weber, M. Welling and P. Perona, *Unsupervised learning of models for recognition*, 2000, Proc. 6th Europ. Conf. Comp. Vis., ECCV2000, Dublin, pp.18-32. **Recipient of the 2010 Koenderink Prize**
- C8 M. Welling and Y. Whye Teh, *Belief optimization for binary networks: A stable alternative to loopy belief propagation*, 2001, UAI2001, Seattle, Washington, pp.554-561.
- C9 Y.W. Teh and M. Welling, *The unified propagation and scaling algorithm*, 2001, Neural Information Processing Systems 14, NIPS2001, Vancouver, pp.953-960.

- C10 G.E. Hinton, M. Welling, Y.W. Teh and S.K. Osindero, *A new view of ICA*, 2001, Int. Conf. on Independent Component Analysis and Blind Source Separation, ICA2001, San Diego, pp.746-751.
- C11 M. Welling and G. Hinton, *A new learning algorithm for mean field Boltzmann machines*, 2001, Int. Conf. Artificial Neural Networks, ICANN2002, Madrid, pp.351-357.
- C12 M. Welling, G. Hinton and S. Osindero, *Learning sparse topographic representations with products of student-t distributions*, 2002, Neural Information Processing Systems 15, NIPS2002, Vancouver, 1383-1390.
- C13 M. Welling, R. Zemel and G. Hinton, *Self-supervised boosting*, 2002, Neural Information Processing Systems 15, NIPS2002, Vancouver, pp.681-688.
- C14 Y.W. Teh and M. Welling, *On improving the efficiency of the iterative proportional fitting procedure*, 2003, Artificial Intelligence and Statistics, AISTATS2003, Key West, pp.178-186.
- C15 M. Welling, R.S. Zemel and G.E. Hinton, *Efficient Parametric Projection Pursuit Density Estimation*, 2003, Conf. on Uncertainty in Artificial Intelligence, UAI2003, Acapulco, pp.575-582.
- C16 M. Welling, F. Agakov and C.K.I. Williams, *Extreme Components Analysis*, 2003, Neural Information Processing Systems 16, NIPS2003, Vancouver, pp.137-144.
- C17 G.E. Hinton, M. Welling and A. Mnih, *Wormholes improve Contrastive Divergence*, Neural Information Processing Systems 16, NIPS2003, Vancouver, pp.417-424.
- C18 M. Welling and Y.W. Teh, *Linear response for approximate inference*, 2003, Neural Information Processing Systems 16, NIPS2003, Vancouver, pp.361-368. rate)
- C19 M. Welling, M. Rosen-Zvi and Y.W. Teh, *Approximate inference by Markov chains on union spaces*, 2004, International Conference on Machine Learning, ICML2004, Banff, pp.230-237. acceptance rate)
- C20 M. Welling, *On the Choice of Regions for Generalized Belief Propagation*, 2004, Uncertainty in Artificial Intelligence, UAI2004, Banff, pp.585-592. acceptance rate)
- C21 M. Welling, M. Rosen-Zvi and G.E. Hinton, *Exponential Family Harmoniums with an Application to Information Retrieval*, 2004, Neural information Processing Systems 17, NIPS2004, Vancouver, pp.1481-1488.
- C22 M. Welling and C. Sutton, *Learning Markov Random Fields using Contrastive Free Energies*, 2005, Tenth International Workshop on Artificial Intelligence and Statistics, AISTATS2005, Barbados, pp.397-404.
- C23 M. Welling, *Robust higher order statistics*, 2005, Tenth International Workshop on Artificial Intelligence and Statistics, AISTATS2005, Barbados, pp.405-412.
- C24 M. Welling, *Inferring offset-normal shape distributions using the Expectation Maximization Algorithm*, 2005, Tenth International Workshop on Artificial Intelligence and Statistics, AISTATS2005, Barbados, pp.389-396.
- C25 M. Welling, T. Minka and Y.W. Teh, *Structured Region Graphs: Morphing EP into GBP*, 2005, Conf. on Uncertainty in Artificial Intelligence, UAI2005, Edinburgh, pp.607-614.
- C26 Alex Holub, M. Welling and P. Perona, 2005, *Combining Generative Models and Fisher Kernels for Object Recognition*, Tenth IEEE Int'l Conf. on Computer Vision, pp.136-143.
- C27 P. Gehler and M. Welling, *Products of "Edge-perts"*, 2005, Neural information Processing Systems 18, NIPS2005, Vancouver, pp.419-426.

- C28 S. Parise and M. Welling, *Learning in Markov Random Fields, An Empirical Study*, 2005, Joint Statistical Meeting, JSM2005, Minneapolis.
- C29 M. Welling and K. Kurihara, *Bayesian K-Means as a "Maximization-Expectation" Algorithm*, 2006, SIAM Conference on Data Mining, SDM2006, Bethesda, Maryland, pp.472-476.
- C30 P. Gehler, A. Holub and M. Welling, *The Rate Adapting Poisson Model with Applications to Information Retrieval and Object Recognition*, 2006, International Conference on Machine Learning, ICML2006, Pittsburgh, Pennsylvania, pp.337-344.
- C31 M. Welling and S. Parise, *Bayesian Random Fields: The Bethe-Laplace Approximation*, 2006, Conf. on Uncertainty in Artificial Intelligence, UAI2006, pp.512-519.
- C32 I. Porteous, A. Ihler, P. Smyth and M. Welling, *Gibbs Sampling for (Coupled) Infinite Mixture Models in the Stick-Breaking Representation*, 2006, Conf. on Uncertainty in Artificial Intelligence, UAI2006, pp.385-392.
- C33 Max Welling, *Flexible Priors for Infinite Mixture Models*, 2006, ICML workshop on Non-parametric Bayesian Methods, ICML2006, Pittsburgh, Pennsylvania.
- C34 K. Kurihara, M. Welling and N. Vlassis, *Accelerated Variational DP Mixtures Models*, 2006, Neural Information Processing Systems 19, NIPS2006, pp.761-768.
- C35 Y.W. Teh, D. Newman and M. Welling, *A Collapsed Variational Bayesian Inference Algorithm for Latent Dirichlet Allocation*, 2006, Neural Information Processing Systems 19, NIPS2006, pp.1353-1360.
- C36 S. Parise and M. Welling, *Bayesian Model Scoring in Markov Random Fields*, 2006, Neural Information Processing Systems 19, NIPS2006, pp.1073-1080.
- C37 K. Kurihara, M. Welling and Y.W. Teh, *Collapsed Variational Dirichlet Process Mixture Models*, 2007, Twentieth International Joint Conference on Artificial Intelligence, IJCAI2007, pp.2796-2801
- C38 Christian Simchisescu and Max Welling, *Generalized Darting Monte Carlo*, 2007, Eleventh International Conference on Artificial Intelligence and Statistics, AISTATS2007, online proceedings, paper 65 at <http://www.stat.umn.edu/~aistat/proceedings/start.htm>.
- C39 M. Welling and J. Lim, *A Distributed Message Passing Algorithm for Sensor Localization*, 2007, International Conference on Artificial Neural Networks, ICANN2007, pp.767-775, Part I
- C40 D. Newman, A. Asuncion, M. Welling and P. Smyth, *Distributed Inference for Latent Dirichlet Allocation*, 2007, Neural Information Processing Systems 20, NIPS2007, pp.1081-1088
- C41 Y.W. Teh, K. Kurihara and M. Welling, *Collapsed Variational Inference for HDP*, 2007, Neural Information Processing Systems 20, NIPS2007, pp.1481-1488
- C42 M. Welling, I. Porteous and E. Bart, *Infinite State Bayesian Networks for Structured Domains*, 2007, Neural Information Processing Systems 20, NIPS2007, pp. 1601-1608
- C43 C. Chemudgunda, N. Sutter and M. Welling, *Latent Variable Models and Their Pitfalls*, SIAM Int'l Conf. Data Mining, SDM2008, pp.196-207.
- C44 R. Gomes, M. Welling and P. Perona, *Incremental Learning of Nonparametric Bayesian Mixture Models*, 2008, Conference on Computer Vision and Pattern Recognition, CVPR2008, pp. 1-8.

- C45 E. Bart, I. Porteous, M. Welling and P. Perona, *Unsupervised Learning of Visual Taxonomies*, 2008, Proceedings Conference on Computer Vision and Pattern Recognition, CVPR2008, pp. 1-8.
- C46 I. Porteous, E. Bart and M. Welling, *Multi-LDA/HDP: A Non Parametric Bayesian Model for Tensor Factorization*, 2008, Twenty-third Conference on Artificial Intelligence, AAAI2008, pp. 1487-1490
- C47 R. Gomes, M. Welling and P. Perona, *Memory Bounded Inference in Topic Models*, 2008, International Conference Machine Learning, ICML2008, pp.344-351
- C48 M. Welling, Y.W. Teh and B. Kappen, *Hybrid Variational-MCMC Inference in Bayesian Networks*, 2008, Conf. on Uncertainty in Artificial Intelligence, UAI2008, pp.587-594
- C49 I. Porteous, A. Asuncion, D. Newman, A. Ihler, P. Smyth and M. Welling, *Fast Collapsed Gibbs Sampling For Latent Dirichlet Allocation*, 2008, Conference on Knowledge Discovery and Data Mining (KDD2008), pp.569-577
- C50 A. Asuncion, P. Smyth, M. Welling, *Asynchronous distributed learning of topic models*, 2008, Neural Information Processing Systems 21 (NIPS2008), pp.81-88
- C51 Y. Chen and M. Welling, 2009, *Bayesian Extreme Components Analysis*, 2009, International Joint Conference on Artificial Intelligence (IJCAI2008), pp.1022-1027
- C52 M. Welling, 2009, *Herding Dynamic Weights to Learn*, International Conference on Machine Learning (ICML2009), pp.141-148
- C53 A. Asuncion, P. Smyth, M. Welling, Y. W. Teh, *On the Role of Smoothing in Topic Models*, 2009, Conf. on Uncertainty in Artificial Intelligence (UAI2009), pp. 27-34.
- C54 M. Welling, 2009, *Herding Dynamic Weights for Partially Observed Random Field Models*, Conf. on Uncertainty in Artificial Intelligence (UAI2009), pp. 599-606
- C55 Y. Zhang, L. Bao, M. Welling, S.H. Yang, *Base Station Localization in Search of Empty Spectrum Spaces for Cognitive Radio Networks*, 2009, The Fifth International Conference on Mobile Ad-hoc and Sensor Networks (MSN 2009)
- C56 Y. Chen and M. Welling, *Parametric Herding*, International Conference on Artificial Intelligence and Statistics (AISTATS2010), pp. 97-104.
- C57 I. Porteous, A. Asuncion, M. Welling, *Bayesian Matrix Factorization with Side Information and Dirichlet Process Mixtures*, 2010, Twenty-Fifth Conference on Artificial Intelligence (AAAI-10), p 563-568.
- C58 Y. Chen, M. Welling, *Dynamical Products of Experts for Modeling Financial Time Series*, 2010, International Conference Machine Learning (ICML-10), pp.207-214.
- C59 Y. Chen, M. Welling, A. Smola, *Super-Samples from Kernel Herding*, 2010, Conf. on Uncertainty in Artificial Intelligence (UAI2010), pp. 109-116.
- C60 L. Bao, Y. Zhang, S.H. Yang, M. Welling, G. Xu and Q. Fu, 2010, *Location Estimation for Wireless Sensor Retrieval*, 2010, IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (IEEE WoWMoM 2010).
- C61 M. Welling and Y. Chen, *Statistical inference using weak chaos and infinite memory*, 2010, J. Phys.: Conf. Ser. 233 012005, pp. 1-15.
- C62 A. Gelfand, L. Van Der Maaten, Y. Chen, M. Welling, *On Herding and the Perceptron Cycling Theorem*, 2010, Neural Information Processing Systems 23 (NIPS2010), pp.694-702.

- C63 A. Korattikara, L. Boyles, M. Welling, J. Kim and H. Park, 2011, *Statistical Optimization for Nonnegative Matrix Factorization*, International Conference on Artificial Intelligence and Statistics (AISTATS2011), pp.128-136
- C64 L. van der Maaten, M. Welling and L. Saul, 2011, *Hidden-Unit Conditional Random Fields*, International Conference on Artificial Intelligence and Statistics (AISTATS2011), pp.479-488
- C65 M. Welling and Y.W. Teh, *Bayesian Learning via Stochastic Gradient Langevin Dynamics*, 2011, International Conference Machine Learning (ICML2011) , pp.681-688
- C66 Y. Chen, A. Gelfand, C. Fowlkes, M. Welling, *Integrating Local Classifiers through Nonlinear Dynamics on Label Graphs with an Application to Image Segmentation*, 2011, International Conference Computer Vision (ICCV2011), pp. 2635 - 2642
- C67 L. Boyles, A. Korattikara, D. Ramanan, M. Welling, *Statistical Tests for Optimization Efficiency*, 2011, Neural Information Processing Systems (NIPS2011), pp. 2196-2204
- C68 D. Görür, L. Boyles and M. Welling, *Scalable Inference on Kingman's Coalescent using Pair Similarity*, 2012, Conference on Artificial Intelligence and Statistics AISTATS 2012, JMLR W&CP 22: pp. 440-448
- C69 X. Zhu, F. Jin, J. Lowengrub and M. Welling, *Predicting Simulation Parameters of Biological Systems using a Gaussian Process Model*, Proceedings of the Joint Statistical Meeting 2012 (**Winner of the ASA SDLM Student Paper Competition**).
- C70 M. Welling, Ian Porteous and Kenichi Kurihara, *Exchangeable Inconsistent Priors for Bayesian Posterior Inference*, Workshop on Information Theory and Applications (ITA), San Diego, 2012.
- C71 S. Ahn, A. Korattikara Balan, M. Welling, *Bayesian Posterior Sampling via Stochastic Gradient Fisher Scoring*, 2012, International Conference Machine Learning (ICML2012), pp. 1591-1598 (**Winner of the ICML Best Paper Award**).
- C72 A. Gelfand and M. Welling, *Generalized Belief Propagation on Tree Robust Structured Region Graphs*, 2012, Conference on Uncertainty in Artificial Intelligence (UAI2012) pp. 296-305
- C73 Y. Chen and M. Welling, *Bayesian Structure Learning for Markov Random Fields with a Spike and Slab Prior*, 2012, Conference on Uncertainty in Artificial Intelligence (UAI2012) pp. 174-184
- C74 M. Welling, A. Gelfand and A. Ihler, *A Cluster-Cumulant Expansion at the Fixed Points of Belief Propagation*, 2012, Conference on Uncertainty in Artificial Intelligence (UAI2012) pp. 883-892
- C75 L. Boyles and M. Welling, *The Time-Marginal Coalescent Prior for Hierarchical Clustering*, 2012, Neural Information Processing Systems (NIPS2012), pp. 2978-2986
- C76 S. Ahn, Y. Chen and M. Welling, 2013, *Distributed and Adaptive Darting Monte Carlo through Regenerations*, 2013, Conference on Artificial Intelligence and Statistics (AISTATS2013), JMLR W&CP 31, pp. 108-116.
- C77 Y. Chen and M. Welling, 2013, *Evidence Estimation for Bayesian Partially Observed MRFs*, 2013, Conference on Artificial Intelligence and Statistics (AISTATS2013), JMLR W&CP 31, pp. 178-186
- C78 P. Welinder, M. Welling and P. Perona, 2013, *A Lazy Man's Approach to Benchmarking: Semi-supervised Classifier Evaluation and Recalibration*, 2013, Conference on Computer Vision and Pattern Recognition (CVPR2013) pp. 3262-3269.

- C79 L. Bornn, Y. Chen, N. de Freitas, M. Eskelin, J. Fang and M. Welling, 2013, *Herded Gibbs Sampling*, International Conference on Learning Representations (ICLR13), (accepted).
- C80 J. Foulds, L. Boyles, C. Dubois, P. Smyth and M. Welling, 2013, *Stochastic Collapsed Variational Bayesian Inference for Latent Dirichlet Allocation*, Conference on Knowledge Discovery and Data Mining (KDD), pp. 446-454.
- C81 A. Korattikara, Y. Chen and M. Welling, 2013, *Austerity in MCMC Land: Cutting the Metropolis-Hastings Budget*, Proceedings of the Joint Statistical Meeting (JSM).
- C82 A. Korattikara, Y. Chen and M. Welling, 2013, *Austerity in MCMC Land: Cutting the Metropolis-Hastings Budget*, International Conference Machine Learning (ICML2014), pp. 181189.
- C83 C. Dubois, A. Korittakara, M. Welling, 2014, *Approximate Slice Sampling for Bayesian Posterior Inference*, Conference on Artificial Intelligence and Statistics (AISTATS2014), accepted.
- C84 M. Welling, 2014, *Exploiting the Statistics of Learning and Inference*, Proceedings of the NIPS 2014 Workshop on "Probabilistic Models for Big Data".
- C85 S. Ahn, B. Shahbaba, M. Welling, 2014, *Distributed Stochastic Gradient MCMC*, International Conference Machine Learning (ICML2014), pp. 10441052
- C86 T. Cohen, M. Welling, 2014, *Learning the Irreducible Representations of Commutative Lie Groups*, International Conference Machine Learning (ICML2014), pp. 17551763
- C87 D. Kingma, M. Welling, 2014, *Efficient Gradient-Based Inference through Transformations between Bayes Nets and Neural Nets*, International Conference Machine Learning (ICML2014), pp. 17821790
- C88 D. Kingma, M. Welling, 2014, *Auto-Encoding Variational Bayes* International Conference on Learning Representations, (ICLR2014).
- C89 T. Meeds, M. Welling, 2014, *GPS-ABC: Gaussian Process Surrogate Approximate Bayesian Computation*, Conference on Uncertainty in Artificial Intelligence (UAI2014), accepted.
- C90 D. Kingma, S. Mohamed, D.J. Rezende, M. Welling, 2014, *Semi-supervised Learning with Deep Generative Models*, Neural Information Processing Systems (NIPS2014), pp. 3581-3589.
- C91 T. Cohen, M. Welling, 2015, *Harmonic Exponential Families on Manifolds*, International Conference Machine Learning (ICML2015), pp. 17571765.
- C92 T. Salimans, D. Kingma, M. Welling, 2015, *Markov Chain Monte Carlo and Variational Inference: Bridging the Gap*, International Conference Machine Learning (ICML2015), pp. 12181226.
- C93 T. Meeds, R. Leenders, M. Welling, 2015, *Hamiltonian ABC*, Conference on Uncertainty in Artificial Intelligence (UAI2015), accepted.
- C94 S. Ahn, A. Korattikara, N. Liu, S. Rajan, M. Welling, 2015, *Large-Scale Distributed Bayesian Matrix Factorization using Stochastic Gradient MCMC*, Conference on Knowledge Discovery and Data Mining (KDD2015), pp. 9-18.
- C95 T. Meeds, M. Welling, 2015, *Optimization Monte Carlo: Efficient and Embarrassingly Parallel Likelihood-Free Inference*, Neural Information Processing Systems (NIPS2015), Proceedings of Neural Information Processing Systems 28, pp. 2080-2088.

- C96 D. Kingma, T. Salimans, M. Welling, 2015, *Variational Dropout and the Local Reparameterization Trick*, Neural Information Processing Systems (NIPS2015), accepted.
- C97 A. Korattikara, V. Rathod, K. Murphy, M. Welling, 2015, *Bayesian Dark Knowledge*, Neural Information Processing Systems (NIPS2015), Proceedings of Neural Information Processing Systems 28, pp. 3438-3446.
- C98 W. Li, S. Ahn, M. Welling, 2016, *Scalable Markov Chain Monte Carlo for Bayesian Network Models*, Conference on Artificial Intelligence and Statistics (AISTATS2016), accepted.
- C99 C. Louizos, K. Swersky, Y. Li, M. Welling, R. Zemel, 2016, *The Variational Fair Auto-Encoder*, International Conference on Learning Representations (ICLR16).
- C100 I. El-Helw, R. Hofman, W. Li, S. Ahn, M. Welling, H. Bal, *Scalable Overlapping Community Detection*, The 5th International Workshop on Parallel and Distributed Computing for Large Scale Machine Learning and Big Data Analytics, ParLearning 2016. **Best Paper Award**
- C101 T. Cohen, M. Welling, *Group Equivariant Convolutional Networks*, International Conference Machine Learning (ICML2016)
- C102 C. Louizos, M. Welling, *Structured and Efficient Variational Deep Learning with Matrix Gaussian Posteriors*, International Conference Machine Learning (ICML2016)
- C103 J. Foulds, J. Geumlek, M. Welling, K. Chaudhury, *On the Theory and Practice of Privacy-Preserving Bayesian Data Analysis*, Conference on Uncertainty in Artificial Intelligence (UAI2016)
- C104 D.P. Kingma, T. Salimans, M. Welling *Improving Variational Inference with Inverse Autoregressive Flow*, Neural Information Processing Systems, 2016 (accepted).
- C105 M. Park, M. Welling, *A note on privacy preserving iteratively reweighted least squares*, ICML Workshop 2016.
- C106 T. Kipf, M. Welling, *Variational Graph Auto-Encoders*, NIPS Workshops 2016.
- C107 J.M. Tomczak, M. Welling, *Improving Variational Auto-Encoders using Householder Flow*, NIPS Workshops 2016
- C108 T. N. Kipf, M. Welling, *Variational Graph Encoder*, NIPS Workshops 2016
- C109 M. Park, J. Foulds, K. Chaudhuri, M. Welling, *DP-EM: Differentially Private Expectation Maximization*, AISTATS 2016
- C110 M. Park, J. Foulds, K. Chaudhuri, M. Welling, *Private Topic Modeling*, NIPS Workshop paper, 2016.
- C111 K. Ullrich, T. Meeds, M. Welling, *Soft Weight-sharing For Neural Network Compression*, International Conference on Learning Representations (ICLR), 2017
- C112 L. Zintgraf, T. Cohen, T. Adel, M. Welling, *Visualizing Deep Neural Network Decisions: Prediction Difference Analysis*, International Conference on Learning Representations (ICLR), 2017
- C113 T. Kipf, M. Welling, *Semisupervised Classification with Graph Convolutional Networks*, International Conference on Learning Representations (ICLR), 2017.
- C114 P. O'Connor, M. Welling, *Sigma Delta Quantized Networks*, International Conference on Learning Representations ICLR, 2017.
- C115 T. Cohen, M. Welling, *Steerable CNNs*, International Conference on Learning Representations ICLR 2017.

- C116 M.Park, J.Foulds, K.Chaudhuri, M.Welling, *Practical Privacy for Expectation Maximization*, AI and Statistics AISTATS, 2017.
- C117 C. Louizos, M. Welling, *Multiplicative Normalizing Flows for Variational Bayesian Neural Networks*, ICML 2017
- C118 C. Louizos, U. Shalit, J. Mooij, D. Sontag, R. Zemel, M. Welling, *Causal Effect Inference with Deep Latent-Variable Models* Authors, Neural Information Processing Systems, 2017.
- C119 C. Louizos, K. Ullrich, M. Welling, *Bayesian Compression for Deep Learning*, Neural Information Processing Systems, 2017.
- C120 J.M. Tomczak, M. Welling, *Improving Variational Auto-Encoders using convex combination linear Inverse Autoregressive Flow*, Benelearn 2017.
- C121 T. Cohen, M. Geiger, M. Welling, *Convolutional Networks for Spherical Signals*, NIPS Workshops 2017.
- C122 J.M. Tomczak, M. Welling, *VAE with a VampPrior*, Int'l Conference on AI and Statistics, 2018
- C123 M Federici, K Ullrich, M Welling, *Improved Bayesian Compression*, NIPS Workshop 2018
- C124 P. O'Connor, E. Gavves, M. Welling, *Temporally Efficient Deep Learning with Spikes*, International Conference for Learning Representations (ICLR 2018).
- C125 C Louizos, M Welling, DP Kingma, *Learning Sparse Neural Networks through L_0 Regularization*, International Conference for Learning Representations (ICLR 2018).
- C126 T.S. Cohen, M. Geiger, J. Khler, M. Welling, *Spherical CNNs*, International Conference for Learning Representations (ICLR 2018).
- C127 E. Hoogeboom, J. W.T. Peters, T. S. Cohen, M.Welling *HexaConv*, International Conference for Learning Representations (ICLR 2018).
- C128 M. Schlichtkrull, T.N. Kipf, P. Bloem, R. Berg, I. Titov, M. Welling, *Modeling Relational Data with Graph Convolutional Networks*, European Semantic Web Conference (ESWC 2018), **best student paper award**
- C129 C.Y. Oh, E. Gavves, M. Welling, *BOCK: Bayesian Optimization with Cylindrical Kernels*, International Conference Machine Learning, (ICML 2018).
- C200 B.S. Veeling, J. Linmans, J. Winkens, T. Cohen, M. Welling, *Rotation Equivariant CNNs for Digital Pathology*, Medical Image Computing and Computer Assisted Intervention (MICCAI 2018)
- C201 R. Selvan, M. Welling, J. H Pedersen, J. Petersen, M. de Bruijne, *Mean field network based graph refinement with application to airway tree extraction*, International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2018), p.750-758.
- C202 K. Luning, P. Putzky, M.W.A. Caan, M. Welling, *Recurrent Inference Machines for Accelerated MRI Reconstruction*, Medical Image Analysis and Deep Learning, (MIDL 2018)
- C203 N. Ing, B. S. Knudsen, A. Gertych, J. M. Tomczak, M. Welling, I. P. Garraway, E. Miller, *A deep multiple instance model to predict prostate cancer metastasis from nuclear morphology*, Medical Imaging with Deep Learning (MIDL), 2018.
- C204 J. Winkens, J. Linmans, B. S. Veeling, T. S. Cohen, M. Welling, *Improved Semantic Segmentation for Histopathology using Rotation Equivariant Convolutional Networks*, Medical Imaging with Deep Learning (MIDL 2018).

- C205 K. Luning, P. Putzky, J. Sonke, L. Reneman, M.W.A. Caan, M. Welling, *Recurrent inference machines for reconstructing heterogeneous MRI data*, Medical Imaging with Deep Learning (MIDL 2018).
- C206 J. M. Tomczak, M. Ilse, M. Welling, M. Jansen, H.G Coleman, M. Lucas, K. de Laat, M. de Bruin, H. Marquering, M. J. van der Wel, O. J. de Boer, C. D. Savci Heijink, S. L. Meijer, *Histopathological classification of precursor lesions of esophageal adenocarcinoma: A Deep Multiple Instance Learning Approach*, Medical Imaging with Deep Learning (MIDL 2018).
- C207 R. Berg, L. Hasenclever, J.M. Tomczak, M. Welling, *Sylvester Normalizing Flows for Variational Inference*, Uncertainty in AI, (UAI 2018)
- C208 T. Kipf, E. Fetaya, K.C. Wang, M. Welling, R. Zemel, *Neural Relational Inference for Interacting Systems*, International Conference Machine Learning, (ICML 2018).
- C209 M. Ilse, J.M. Tomczak, M. Welling, *Attention-based deep multiple instance learning*, International Conference Machine Learning, (ICML 2018).
- C210 W. Kool, H. van Hoof, M. Welling, *Attention, Learning to Solve Routing Problems!*, International Conference for Learning Representations (ICLR 2019).
- C211 C. Louizos, M. Reisser, T. Blankevoort, E. Gavves, M. Welling *Relaxed Quantization for Discretized Neural Networks*, International Conference for Learning Representations (ICLR 2019).
- C212 P. O’Connor, E. Gavves, M. Welling, *Initialized Equilibrium Propagation for Backprop-Free Training*, International Conference for Learning Representations (ICLR 2019).
- C213 A. Atanov, A. Ashukha, K. Struminsky, D.P. Vetrov, M. Welling, *The Deep Weight Prior*, International Conference for Learning Representations (ICLR 2019).
- C214 C. LI, M. Welling, J. Zhu, B. Zhang, *Graphical Generative Adversarial Networks*, Neural Information Processing Systems (Neurips 2018).
- C215 M. Weiler, W. Boomsma, M. Geiger, M. Welling, T. Cohen, *3D Steerable CNNs: Learning Rotationally Equivariant Features in Volumetric Data*, Neural Information Processing Systems (Neurips 2018).
- C216 P. OConnor, E. Gavves, M. Welling, *Training a Spiking Neural Network with Equilibrium Propagation*, AI and Statistics AISTATS, 2019, PMLR 89:1516-1523.
- C217 T. Cohen, M. Weiler, B. Kicanaoglu, M. Welling *Gauge Equivariant Convolutional Networks and the Icosahedral CNN*, International Conference Machine Learning, (ICML 2019).
- C218 E. Hoogeboom, R. Van den Berg, M. Welling *Emerging Convolutions for Generative Normalizing Flows*, International Conference Machine Learning, (ICML 2019).
- C219 W. Kool, H. van Hoof, M. Welling, *Stochastic Beams and Where To Find Them: The Gumbel-Top-k Trick for Sampling Sequences Without Replacement*, International Conference Machine Learning, (ICML 2019), **Honorable Mention**
- C220 G. Patrini, M. Carioni, P. Forre, S. Bhargav, M. Welling, R. van den Berg, T. Genewein, F. Nielsen, *Sinkhorn autoencoders*, Uncertainty in AI, (UAI 2019)
- C221 K. Ullrich, R. Van den Berg, M. Brubaker, D. Fleet, M. Welling *Differentiable probabilistic models of scientific imaging with the Fourier slice theorem*, Uncertainty in AI, (UAI 2019)

Book Chapters

- BC1 A. Asuncion, S. Triglia, I. Porteous, P. Smyth, M. Welling, *Distributed Algorithms for Topic Models*, 2010, in: *Machine Learning on Very Large Data Sets*, M. Bilenko, J. Langford, R. Bekkerman (Eds.), Cambridge University Press.
- BC2 Y. Chen, A. Gelfand, M. Welling, 2014, *Herding for Structured Prediction*, in: *Advanced Structured Prediction*, S. Nowozin, P. V. Gehler, J. Jancsary, C. Lampert (Eds.), The MIT Press Cambridge, Massachusetts London, England. item[BC3] Y. Chen, M. Welling, *Herding as a Learning System with Edge-of-Chaos Dynamics*, Special Issue on Perturbations, Optimization and Statistics” Eds. T. Hazan, G. Papandreou, D. Tarlow; 2016

Books

- B1 D. Van Dyk, M. Welling (Eds.), Proceedings of the Twelfth International Conference on Artificial Intelligence and Statistics, JMLR Workshop and Conference Proceedings Volume 5, April 16-18, 2009, Clearwater Beach, Florida USA.
- B2 M. Welling, Z. Ghahramani (Eds.), Advances in Neural Information Processing Systems 26, December 5-8, 2013.
- B3 Bastian Leibe, Jiri Matas, Nicu Sebe, Max Welling (Eds.), Computer Vision ECCV 2016, 14th European Conference, Amsterdam, The Netherlands, October 11-14, 2016, Proceedings, Lecture Notes in Computer Science, Springer, 2016.

Miscellaneous Publications

- M1 M. Welling, *Product of Experts*, 2007, Scholarpedia, [http://www.scholarpedia.org/article/Product of Experts](http://www.scholarpedia.org/article/Product_of_Experts).
- M2 M. Welling, *Marrying Graphical Models with Deep Learning*, ERCIM NEWS, issue 107, pp. 20-21, 2016

Book Reviews

- BR1 M. Welling, *Advanced mean field methods, theory and applications*, eds. M. Opper and D. Saad, 2002, The Computer Journal 45 (2), pp. 257-258.

Contributed Discussions

- D1 M. Welling, *Discussion of “Riemann Manifold Langevin and Hamiltonian Monte Carlo Methods” by M. Girolami and B. Calderhead*, Journal of the Royal Statistical Society: Series B (Statistical Methodology) Volume 73, Issue 2, pages 123 - 214, March 2011
- D2 M. Welling, *Discussion of “Quantifying the weight of evidence from a forensic fingerprint comparison: a new paradigm” by C. Neumann, I. W. Evett and J. Skerrett*, Journal of the Royal Statistical Society: Series A (Statistics in Society)

Invited Talks (after 2017)

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| Jan. 31 2017 | SNS Bank Amsterdam |
| Feb. 14 2017 | Centraal Planbureau (CPB) |
| Feb. 20 2017 | University of Edinburgh |
| Mar 03 2017 | Universiteit Amsterdam |
| Mar 16 2017 | The Future of Healthcare |
| Mar 22 2017 | NG Resound |

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| Mar 23 2017 | VSOR |
| Mar 29 2017 | MSR Cambridge |
| Apr. 04 2017 | TU/e |
| Apr. 08 2017 | Co-assistenten Congress Egmond aan Zee |
| Apr. 27 2017 | Fields Institute, Toronto, CAN |
| Apr. 28 2017 | MARS Institute, Toronto, CAN |
| May. 05 2017 | Qualcomm Innovation Fellowship Talk, UvA, Amsterdam |
| May. 18 2017 | IoP Seminar, UvA, Amsterdam |
| May. 19 2017 | Big History Lecture, UvA, Amsterdam |
| May. 22 2017 | NVPHBV Lecture, LU, Leiden |
| Jun. 10 2017 | Keynote Benelearn, TU/e, Eindhoven |
| Jun. 15 2017 | Synechron, Amsterdam |
| Jun. 20 2017 | Deep learning Tutorial, Bosch, Ludwigstein, DE |
| Jun. 21 2017 | Deep Learning Tutorial, MPI Tübingen, DE |
| Jun. 30 2017 | Deep Learning Tutorial, U. Montreal, CAN |
| Sep. 09 2017 | ML Summit, Qualcomm, San Diego, USA |
| Oct. 10 2017 | Summit AI, Amsterdam |
| Oct. 19 2017 | ML Research Retreat, SAP Innovation Center, Potsdam |
| Nov. 23 2017 | CWI, ML Symposium |
| Dec. 03 2017 | CIFAR meeting, Long Beach |
| Dec. 08 2017 | NIPS ML for Physical Sciences Workshop |
| Dec. 09 2017 | NIPS Bayesian Deep Learning Workshop |
| Jan. 15 2018 | Lorentz Center Workshop on Dark Matter and ML |
| Feb. 12 2018 | Alan Turing Institute, London |
| Feb. 26 2018 | Amsterdam Lezing |
| Mar. 19 2018 | ICT Open, Amersfoort |
| Apr. 9 2018 | Boston Consultancy Group, Amsterdam |
| Apr. 11 2018 | Top Sector Meeting HTSM, Eindhoven |
| May 7 2018 | AMOLF, Amsterdam |
| May 22 2018 | Qualcomm Office, Beijing |
| May 23 2018 | Qualcomm China AI Day, Beijing |
| June 21 2018 | Care Summit, Rotterdam |
| June 28 2018 | WBIR, Leiden |
| July 12 2018 | ICML, Stockholm |
| Sept. 17 2018 | MLSP, Aalborg |
| Sept. 27 2018 | Philips Research, Eindhoven |
| Nov. 31 2018 | CoNLL, Brussels |
| Dec. 8 2018 | Neurips WS on Medical Imaging, Montreal |
| Jan. 16 2019 | NGB/LNMB Conference, Lunteren |
| Mrt. 13 2019 | Smart Systems Summit, Den Bosch |
| Mrt. 20 2019 | Yes X, Eindhoven |
| Apr. 5 2019 | StatLearn, Grenoble |
| Apr. 11 2019 | NRC Live, Amsterdam |
| Apr. 16 2019 | CERN, Geneve |
| Apr. 24 2019 | MIT, Boston |
| Apr. 29 2019 | Flatiron Institute, NYC |