

Curriculum Vitae

Peter Gehler

Personal Data

Position Research Group Leader and Senior Research Scientist
Work Address Max Planck Institute for Intelligent Systems
Perceiving Systems Department
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Education

- 2009 **Dr. rer. nat.**, *Saarland University*, Saarbrücken, Germany.
Thesis: Kernel Learning Approaches for Image Classification
Committee: Prof. Dr. Bernhard Schölkopf, Prof. Dr. Joachim Weickert, Prof. Dr. Matthias Hein, Prof. Dr. Matthias Seeger, Prof. Dr. Luc Van Gool
- 2005 **Diploma in Computer Science**, *University of Bielefeld*, Germany.
Thesis: Denoising Images in the Wavelet Domain using a Product of Edgeperts
Committee: Prof. Dr. Helge Ritter, Prof. Dr. Max Welling
- 1998-2005 **Diploma Student Computer Science**, *University of Bielefeld*, Germany.
- 2000-2005 **Diploma Student Mathematics**, *University of Bielefeld*, Germany.

Academic Positions

- from 01/2015 **Research Group Leader**, *Bernstein Center for Integrated Neuroscience (BCCN)*, Eberhard Karls Universität Tübingen, Germany.
- from 01/2012 **Senior Research Scientist and Group Leader**, *Max Planck Institute for Intelligent Systems*, Perceiving Systems Department, Tübingen, Germany.
- 08/2014 **Visiting Researcher**, *Microsoft Research*, Machine Learning and Perception Group, Cambridge, UK.
- 2011 **Research Group Leader**, *Max Planck Institute for Informatics*, Department of Computer Vision and Multimodal System, Saarbrücken, Germany.
- 2010-2011 **Professor (Vertretung)**, *Technical University Darmstadt*, Multimodal Interactive Systems, Darmstadt, Germany.
- 2009-2010 **Postdoctoral Researcher**, *ETH Zurich*, Department of Information Technology and Electrical Engineering, Zürich, Switzerland.
- 2005-2009 **Ph.D. student**, *Max Planck Institute for Biological Cybernetics*, Empirical Inference Department, Tübingen, Germany.
- 10-11/2005 **Junior Specialist**, *University of Irvine*, Computer Science Department, CA, USA, Supervisor: Prof. Dr. Max Welling.
- 09-10/2004 **Junior Specialist**, *University of Irvine*, Computer Science Department, CA, USA, Supervisor: Prof. Dr. Max Welling.

09/2002– **Visiting Student**, *University of Toronto*, Machine Learning Group, Canada
06/2003 Supervisor: Prof. Dr. Geoffrey Hinton.

Industrial Experience

- 2016 **Consulting**, *oneVision GmbH*.
- 2009 **Consulting**, *Carl Zeiss OIM GmbH*, Audit on Optical Inspection System.
- 2007 **Internship**, *Microsoft Research Cambridge, UK*,
Supervisor: Prof. Dr. Andrew Blake.
- 2007 **Consulting**, *Robert Bosch GmbH*, Optical Inspection Systems.

Awards and Scholarships

- 2011 **Best Impact Paper Prize**, *at the British Machine Vision Conference (BMVC) 2011*, for the paper *Branch&Rank Non-Linear Object Detection*.
- 2011 **Best Reviewer Award**, *IEEE Conference of Computer Vision and Pattern Recognition (CVPR)*.
- 2007 **Winner of the DAGM 2007 competition**, *on weakly supervised learning for industrial optical inspection*, with Wolf Kienzle.
- 2002 **Scholarship**, *from the Westfälisch Lippische Universitätsgesellschaft for a visit at the University of Toronto*.

Chair Positions and Memberships

- 2017 **Area Chair**, *International Conference on Machine Learning (ICML)*, Sydney.
- 2016 **Area Chair**, *Neural Information Processing Systems (NIPS)*, Barcelona.
- 2016 **Area Chair**, *European Conference on Computer Vision (ECCV)*, Amsterdam.
- 2015 **Program Chair**, *37th German Conference on Pattern Recognition (GCPR)*, Aachen.
- since 2015 **Associate Editor**, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*.
- 2015 **Area Chair**, *International Conference on Computer Vision (ICCV)*, Santiago de Chile.
- 2014 **Area Chair**, *European Conference on Computer Vision (ECCV)*, Zürich.

Supervision

- current
- since 10/2016 **Raghudeep Gadde**, *Video Segmentation*, MPI Intelligent Systems & ETH Zürich.
Postdoc Supervisor
- since 01/2016 **Sergey Prokudin**, *Sequential Structured Prediction*, MPI Intelligent Systems.
Supervisor of Ph.D. research
- since 05/2015 **Christoph Lassner**, *Efficient Inference in Structured Output Models*, Bernstein Center.
Supervisor of Ph.D. research

- since 02/2014 **Thomas Nestmeyer**, *Learning Intrinsic Image Decompositions*, MPI Intelligent Systems.
Supervisor of Ph.D. research
- since 01/2013 **Varun Jampani**, *Generative and Discriminative Models*, MPI Intelligent Systems.
Supervisor of Ph.D. research
- past
- 03/2012–01/2016 **Andreas Lehrmann**, *Non-parametric Models for Human Bodies*, Bernstein Center, now Researcher at Disney Research.
Supervisor of Ph.D. research
- 2011–2015 **Bojan Pepik**, *Geometry in Object Detection*, MPI Informatics, now Amazon.
Co-supervision of Ph.D. Research, with Bernt Schiele
- 02/2011–10/2015 **Martin Kiefel**, *Inference Processes for Human Pose Estimation*, Bernstein Center, now Google.
Supervisor of Ph.D. research
- 2011–2015 **Leonid Pishchulin**, *Human Pose Estimation*, MPI Informatics, now Researcher at Amazon.
Co-supervision of Ph.D. Research, with Bernt Schiele
- 2011 **Christoph Dann**, *BA thesis: A Spatial Consistent CRF for Semantic Image Segmentation (2011)*, TU Darmstadt, now CMU.
Supervisor of Bachelor project
- 2011–2013 **Elena Tretyak**, *Estimating Light in Rooms*, MPI Intelligent Systems, now Google.
Supervisor of Ph.D. research
- 2009–2010 **Alexander Mansfield**, *Ph.D. Thesis: Visual Media Editing Using Scene Understanding (2014)*, ETH, now faceshift.
Co-supervision of Ph.D. Research, with Luc Van Gool
- 2009–2011 **Alain Lehmann**, *Ph.D. Thesis: Efficient Object Detection (2011)*, ETH.
Co-supervision of Ph.D. Research, with Luc Van Gool

PhD Committee Member

- since 2016 **Jan-Matthis Lückmann**, *research center ceasar – Max Planck Society*, PhD Committee.
- since 2016 **David Janssen**, *Universität Tübingen*, PhD Committee.
- 2015/2016 **Lucas Theis**, *Universität Tübingen*, PhD Committee, *Advances in Probabilistic Modeling of Natural Images*.
- since 01/2015 **Heiko Schütt**, *Universität Tübingen*, PhD Advisory Board, *Thesis: A Dynamic Saliency Model from Early Vision*.
- 03/2013 **Shida Beigpour**, *Universitat Autònoma de Barcelona, Spain*, *Thesis Evaluation and Committee, Thesis: Illumination and Object Reflectance Modeling*.

Complete List of University courses

- WS 14/15 **Graphical Models in Computer Vision**, *Master Level Course, 2h lectures + 2h exercises per week*, University of Tübingen, with Andreas Geiger.
- SS 13 **Graphical Models in Computer Vision**, *Master Level Course, 2h lectures + 2h exercises per week*, University of Tübingen.

- WS 11/12 **Probabilistic Graphical Models and Their Applications**, *Master Level Course, 2h lectures + 2h exercises per week*, Saarland University, with Bernt Schiele.
- SS 11 **Machine Learning 1**, *Master Level Course, 2h lectures + 2h exercises per week*, TU Darmstadt.
- WS 10/11 **Machine Learning 2**, *Master Level Course, 3h lectures + 2h exercises per week*, TU Darmstadt.

Invited Lectures at Summer Schools

- 2014 **Structured Learning in Computer Vision**, *2h lecture*, Invited Teacher at the ETH/MPI-IS Summer School, ETH Zürich.
- 2013 **Practical on Kernel Methods**, *3h practical session*, Invited Teacher at the Machine Learning Summer School (MLSS), Tübingen.
- 2013 **Introduction to Probabilistic Graphical Models**, *2h lecture*, Invited Lecturer at ENS/INRIA Visual Recognition and Machine Learning Summer School, Paris.

Invited Talks

- 14.12.2016 **Visual Inference Problems: Structured Outputs and Inverse Graphics**, *EPFL*.
- 23.06.2016 **Learning Bilateral Filters**, *ZEISS Symposium, Optics in the Digital World*.
- 27.04.2016 **Learning Bilateral Filters**, *Max Planck Institut für Informatik*.
- 31.03.2016 **Sparse, High Dimensional Filtering**, *Czech Technical University, Pattern Recognition and Computer Vision Colloquium*.
- 19.02.2016 **Learning Bilateral Filters**, *Bosch Corporate Research*.
- 25.01.2016 **Learning Bilateral Filters**, *Amazon Berlin*.
- 11.12.2015 **Intrinsic Video and the Bilateral Filter**, *International Workshop on Color and Photometry in Computer Vision (at ICCV)*.
- 12.12.2014 **Object Detection and Pose Estimation, From Models to Inference**, *ADAS Kolloquium, Continental Cooperation*.
- 12.09.2014 **Fields of Parts**, *International Workshop on Parts and Attributes (at ECCV)*.
- 13.08.2014 **Looking at Humans: Pose Estimation, Pose Models, and Human Motion**, *University College London*.
- 01.08.2014 **Predicting Human Poses, Human Motion, and Objects in 3D**, *Microsoft Research Cambridge*.
- 16.06.2014 **Fields of Parts**, *ECCV AC workshop, ETH Zürich*.
- 17.02.2014 **Richer and Bigger Parts — Finding Objects in 3D and Humans through their pose**, *University of Oxford*.
- 22.11.2013 **Structured Learning with Part Based Models**, *Universität Basel*.
- 09.10.2013 **Structured Models for Visual Physics**, *University of Amsterdam*.
- 18.03.2013 **Search Based Inference and 3D Object Detection**, *Universitat Autònoma de Barcelona, CVC*.
- 07.05.2012 **The Rich and the Fast**, *KU Leuven*.
- 02.12.2009 **Kernel Learning Approaches to Image Classification**, *TU Darmstadt, Computer Vision Group*.

- 11.12.2009 **Kernel Learning Approaches to Image Classification**, *Whistler, Canada*, NIPS Workshop on *Understanding Multiple Kernel Learning*.
- 19.02.2009 **Learning how to pre-process using a kernel learning approach**, *ETH Zurich*.

Workshop Organization

- 12/2015 **Inverse Rendering**, at *ICCV 2015, Santiago de Chile*, with Anita Sellent, Carsten Rother, Stefan Roth.
- 06/2013 **Structured Prediction — Tractability, Learning and Inference**, at *CVPR 2013, Portland, OR, USA*, with Sebastian Nowozin.
- 05/2012 **At the intersection of Vision, Graphics, Learning and Sensing — Representations and Applications**, *invitation only, Cambridge, UK*, with Carsten Rother, Derek Hoiem, Michael Goessele, Sharam Izadi.
- 11/2011 **Workshop on Kernels and Distances for Computer Vision**, at *ICCV 2011, Barcelona, Spain*, with Christoph Lampert and Brian Kulis.
- 06/2010 **Workshop on Structured Models in Computer Vision**, at *CVPR 2010, San Francisco, CA, USA*, with Christoph Lampert and Vittorio Ferrari.

Scientific Services and Peer Reviewing

Journals

- JMLR **Journal of Machine Learning Research**.
- PAMI **Pattern Analysis and Machine Intelligence**.
- IJCV **International Journal of Computer Vision**.
- ML **Machine Learning**.

Conferences

- NIPS **Advances in Neural Information Processing Systems**, *2007-now*.
- ICML **International Conference on Machine Learning**, *2007,2008,2011-now*.
- CVPR **IEEE Computer Vision and Pattern Recognition**, *2010-now*.
- ECCV **European Conference on Computer Vision**, *2010-now*.
- ICCV **International Conference on Computer Vision**, *2011-now*.
- GCPR **German Conference for Pattern Recognition**, *2013-now*.
- DAGM **Deutsche Arbeitsgemeinschaft für Mustererkennung**, *2010-2012*, since 2013: GCPR.
- AIStats **Artificial Intelligence and Statistics**, *2011-now*.

Workshops

- Machine Learning for Intelligent Image and Video Processing**, *2015*, at ICCV.
- VMV **International Workshop on Vision, Modelling and Visualization**, *2014*.
- CRICV **IEEE Workshop on Color and Reflectance in Imaging and Computer Vision**, *2009,2010,2011*.
- Indoor Scene Understanding: Where Graphics meets Vision**, *2014*, Siggraph Asia.
- SUAS **Workshop on Scene Understanding for Autonomous Systems**, *2014*, at ACCV.

HACI **Understanding Human Activities: Context and Interactions**, 2013, at ICCV.
PnA **Second International Workshop on Parts and Attributes**, 2012, at ECCV.

Complete List of Publications

Peter Gehler

Theses

- [1] **Peter Gehler**. Kernel learning approaches to image classification. PhD thesis, Saarland University, 2009.
- [2] **Peter Gehler**. Denoising images in the wavelet domain using a product of edgeperfs. Diploma thesis, University of Bielefeld, 2005.

Edited Books

- [3] Jürgen Gall, **Peter Gehler**, and Bastian Leibe, editors. *Proceedings of the 37th German Conference on Pattern Recognition*. Springer, October 2015.
- [4] Sebastian Nowozin, **Peter Gehler**, Jeremy Jancsary, and Christoph Lampert, editors. *Advanced Structured Prediction*. Neural Information Processing. MIT press, November 2014.

Journal Publications

- [5] Varun Jampani, Sebastian Nowozin, Matthew Loper, and **Peter Gehler**. The informed sampler: A discriminative approach to Bayesian inference in generative computer vision models. *Computer Vision and Image Understanding*, 136(0):32 – 44, 2015. Generative Models in Computer Vision and Medical Imaging.
- [6] Bojan Pepik, Michael Stark, **Peter Gehler**, and Bernt Schiele. Multi-view and 3d deformable part models. *Pattern Analysis and Machine Intelligence, IEEE Transactions on*, PP(99):1–1, 2015.
- [7] Alain Lehmann, **Peter Gehler**, and Luc Van Gool. Branch&rank for efficient object detection. *International Journal of Computer Vision*, 106(3):252–268, 2014.

Conference Publications

- [8] Federica Bogo, Angjoo Kanazawa, Christoph Lassner, **Peter Gehler**, Javier Romero, and Michael J. Black. Keep it SMPL: Automatic estimation of 3D human pose and shape from a single image. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Lecture Notes in Computer Science. Springer International Publishing, October 2016.
- [9] Raghudeep Gadde, Varun Jampani, Martin Kiefel, Daniel Kappler, and **Peter Gehler**. Superpixel convolutional networks using bilateral inceptions. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Lecture Notes in Computer Science. Springer International Publishing, October 2016.
- [10] Christoph Lassner, Daniel Kappler, Martin Kiefel, and **Peter Gehler**. Barrista – caffe well-served. In *ACM Multimedia Open Source Software Competition*, October 2016.

- [11] Varun Jampani, Martin Kiefel, and **Peter Gehler**. Learning sparse high dimensional filters: Image filtering, dense crfs and bilateral neural networks. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- [12] Leonid Pishchulin, Eldar Insafutdinov, Siyu Tang, Björn Andres, Mykhaylo Andriluka, **Peter Gehler**, and Bernt Schiele. Deepcut: Joint subset partition and labeling for multi person pose estimation. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, June 2016.
- [13] Varun Jampani, Raghudeep Gadde, and **Peter Gehler**. Efficient facade segmentation using auto-context. In *Proceedings of the IEEE Winter Conference on Applications of Computer Vision (WACV)*. IEEE, January 2015.
- [14] Martin Kiefel and **Peter Gehler**. Human pose estimation with a fields of parts. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Lecture Notes in Computer Science, pages 331–346. Springer, September 2014.
- [15] Naejin Kong, **Peter Gehler**, and Michael Black. Intrinsic video. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Lecture Notes in Computer Science, pages 360–375. Springer, September 2014.
- [16] Andreas Lehrmann, **Peter Gehler**, and Sebastian Nowozin. Efficient non-linear Markov models for human motion. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, pages 1314–1321, Columbus, Ohio, USA, June 2014. IEEE.
- [17] Leonid Pishchulin, Mykhaylo Andriluka, **Peter Gehler**, and Bernt Schiele. 2D human pose estimation: New benchmark and state of the art analysis. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, pages 3686–3693, Columbus, Ohio, USA, June 2014. IEEE.
- [18] Bojan Pepik, Michael Stark, **Peter Gehler**, and Bernt Schiele. Multi-view priors for learning detectors from sparse viewpoint data. In *International Conference on Learning Representations (ICLR)*, April 2014.
- [19] Andreas Lehrmann, **Peter Gehler**, and Sebastian Nowozin. A non-parametric Bayesian network prior of human pose. In *International Conference on Computer Vision (ICCV)*, Sydney, Australia, December 2013.
- [20] Leonid Pishchulin, Micha Andriluka, **Peter Gehler**, and Bernt Schiele. Strong appearance and expressive spatial models for human pose estimation. In *International Conference on Computer Vision (ICCV)*, Sydney, Australia, December 2013.
- [21] Bojan Pepik, Michael Stark, **Peter Gehler**, and Bernt Schiele. Occlusion patterns for object class detection. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, pages 3286–3293, Portland, OR, June 2013.
- [22] Leonid Pishchulin, Micha Andriluka, **Peter Gehler**, and Bernt Schiele. Poselet conditioned pictorial structures. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, pages 588–595, Portland, OR, June 2013. oral presentation.
- [23] Bojan Pepik, **Peter Gehler**, Michael Stark, and Bernt Schiele. 3D2PM – 3D deformable part models. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Lecture Notes in Computer Science, pages 356–370, Firenze, Italy, October 2012.
- [24] Christoph Dann, **Peter Gehler**, Stefan Roth, and Sebastian Nowozin. Pottics – the Potts topic model for semantic image segmentation. In *Proceedings of 34th DAGM*

Symposium, Lecture Notes in Computer Science, pages 397–407. Springer, August 2012.

- [25] Bojan Pepik, Michael Stark, **Peter Gehler**, and Bernt Schiele. Teaching 3D geometry to deformable part models. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, pages 3362–3369, Providence, RI, USA, 2012. oral presentation.
- [26] Alain Lehmann, **Peter Gehler**, and Luc VanGool. Branch&rank: Non-linear object detection. In *Proceedings of the British Machine Vision Conference (BMVC)*, pages 8.1–8.11. BMVA Press, September 2011.
- [27] Francesco Dinuzzo, Cheng Soon Ong, **Peter Gehler**, and Gianluigi Pillonetto. Learning output kernels with block coordinate descent. In *Proceedings of the 28th International Conference on Machine Learning (ICML)*, pages 49–56. ACM, June 2011.
- [28] **Peter Gehler**, Carsten Rother, Martin Kiefel, Lumin Zhang, and Bernhard Schölkopf. Recovering intrinsic images with a global sparsity prior on reflectance. In *Advances in Neural Information Processing Systems (NIPS)*, pages 765–773, 2011.
- [29] Alex Mansfield, **Peter Gehler**, Luc Van Gool, and Carsten Rother. Scene carving: Scene consistent image retargeting. In *Proceedings of the European Conference on Computer Vision (ECCV)*, September 2010.
- [30] Sebastian Nowozin, **Peter Gehler**, and Christoph Lampert. On parameter learning in CRF-based approaches to object class image segmentation. In *Proceedings of the European Conference on Computer Vision (ECCV)*, September 2010.
- [31] **Peter Gehler** and Sebastian Nowozin. Let the kernel figure it out, principled learning of pre-processing for kernel classifiers. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, pages 2836–2843, 2009.
- [32] **Peter Gehler** and Sebastian Nowozin. On feature combination for multiclass object classification. In *International Conference on Computer Vision (ICCV)*, pages 221–228, 2009. oral presentation.
- [33] **Peter Gehler**, Carsten Rother, Andrew Blake, Tom Minka, and Toby Sharp. Bayesian color constancy revisited. In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, pages 1–8, June 2008.
- [34] **Peter Gehler** and Olivier Chapelle. Deterministic annealing for multiple-instance learning. In *Proceedings of the 11th International Conference on Artificial Intelligence and Statistics (AISTats)*, pages 123–130, 2007.
- [35] **Peter Gehler**, Alex D. Holub, and Max Welling. The rate adapting poisson model for information retrieval and object recognition. In *Proceedings of the 23rd international conference on Machine learning (ICML)*, pages 337–344. ACM, 2006.
- [36] **Peter Gehler** and Max Welling. Products of “Edge-perts”. In *Advances in Neural Information Processing Systems (NIPS)*, volume 18, pages 419–426. MIT Press, 2006.

Book Chapters

- [37] **Peter Gehler** and Bernhard Schölkopf. An introduction to kernel learning algorithms, In *Kernel Methods for Remote Sensing Data Analysis*, chapter 2, pages 25–48. Wiley, December 2009.

Workshop Contributions (reviewed)

- [38] Bojan Pepik, Michael Stark, **Peter Gehler**, Tobias Ritschel, and Bernt Schiele. 3D object detection in the wild. In *Computer Vision and Pattern Recognition (CVPR) workshop on 3D from a Single Image*, Boston, USA, June 2015.
- [39] Martin Kiefel, Varun Jampani, and **Peter Gehler**. Permutohedral lattice CNNs. In *ICLR Workshop Track*, May 2015.
- [40] **Peter Gehler** and Alain Lehmann. Learning search based inference for object detection. In *International Conference on Machine Learning (ICML) workshop on Inferring: Interactions between Inference and Learning*, Edinburgh, Scotland, UK, July 2012.
- [41] Alex Mansfield, **Peter Gehler**, Luc Van Gool, and Carsten Rother. Visibility maps for improving seam carving. In *Media Retargeting Workshop, European Conference on Computer Vision (ECCV)*, September 2010.
- [42] **Peter Gehler** and Sebastian Nowozin. Infinite kernel learning. In *Proceedings of NIPS 2008 Workshop on Kernel Learning: Automatic Selection of Optimal Kernels*, 2008.
- [43] Matthias Franz and **Peter Gehler**. How to choose the covariance for Gaussian process regression independently of the basis. In *Proceedings of the Workshop Gaussian Processes in Practice*, 2006.

Technical Reports

- [44] **Peter Gehler** and Sebastian Nowozin. Infinite kernel learning. Technical Report 178, Max Planck Institute, 2008.
- [45] **Peter Gehler** and Matthias Franz. Implicit Wiener Series, Part II: Regularised estimation. Technical Report 148, Max Planck Institute, November 2006.