

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
Spemannstrasse 41, 72076 Tübingen, Germany
Website <http://peter.gehler.net> Email pgehler@tuebingen.mpg.de

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.