

CURRICULUM VITAE

Name

Pushmeet Kohli

Current Positions

**Technical Advisor to Rick Rashid,
Chief Research Officer**
Microsoft Corporation

Principal Research Scientist
Machine Learning and Perception
Microsoft Research Cambridge

Education

PhD in Computer Vision, 2007
Oxford Brookes University, Oxford, UK
• Advisor: Prof. Philip Torr

Bachelors in Technology, Computer Science and Engineering, 2004
National Institute of Technology, Warangal, India
• First Class with Distinction

Work Experience

Technical Advisor to the Chief Research Officer, Microsoft, Redmond, USA (May 2015 – Present)
Principal Research Scientist, Microsoft Research, Cambridge, UK (Feb 2015 – Present)
Senior Research Scientist, Microsoft Research, Cambridge, UK (Aug 2013 – Jan 2015)
Research Scientist, Microsoft Research, Cambridge, UK (Jan 2008 – Jul 2012)
Visiting Research Scientist, Microsoft Research, Bangalore, India (Dec 2007)
Research Intern, Microsoft Research, Cambridge, UK (June–Sep 2006)
Research Intern, Microsoft Research, Redmond, USA (May–Sep 2004)

Professional/Academic Duties

Editorial Board, International Journal of Computer Vision
Editorial Board, Computer Vision and Image Understanding
Area Chair (ICCV 2015, CVPR 2013, BMVC 2012/2013, ICVGIP 2010/2012)
Tutorial Chair, ICCV 2011
Workshop Chair, ICCV 2013
Reviewer for CVPR, ICCV, ECCV, BMVC, SIGGRAPH, Eurographics, NIPS, ICML, PAMI, IJCV, JMLR
Co-organizer, International Workshop on Tractability, Cambridge (June 2010)
Co-organizer, MSR Symposium on Markov Random fields, Cambridge (October 2008)

Honors and Awards

- Best Paper Award, Constructive ML at ICML 2015
- Runner-up, Best Paper Award, CVPR 2015
- Runner-up, Best Paper Award, CHI 2015
- Runner-up, Best Paper Award, WWW 2014
- Runner-up, Best Paper Award, TVX 2014
- Runner-up, Best Demo Award, CVPR 2014
- Nominated to the Editorial Board of IJCV
- Nominated to the Editorial Board of CVIU
- Nominated to ACM's Distinguished Speaker Program
- Finalist, ERCIM Cor Baayern Award 2010
- Sullivan Doctoral Thesis Award 2008
- Awarded to the author of the best machine vision thesis from the UK
- Runner-up, CPHC / British Computer Society Distinguished Dissertation Award 2008
- Merit Award for Academic Excellence, NIT Warangal
- Best Paper Award, International Symposium on Mixed and Augmented Reality (ISMAR) 2011
- Best Paper Award, European Conference on Computer Vision (ECCV) 2010
- Best Paper Award, ICVGIP 2010
- Best Paper Award, ICVGIP 2006
- Winner, Crowd-flower crowdsourcing contest 2013
- Runner-up, PASCAL Visual Object Category Segmentation Challenge 2008

Co-Supervised Students and Interns

Lubor Ladicky, PhD student co-supervised with Prof. Philip Torr (now at ETHZ)
Kyomin Jung, Intern 2008 (now Assistant Professor at Seoul National University)
Michal Kosinski, Intern 2009 (now Assistant Professor, Stanford University)
Dhruv Batra, Intern 2010, (now Assistant Professor at Virginia Tech)
Ross Girshick, Intern 2010, (now Research Scientist at Microsoft Research)
Angela Yao, Intern 2012, (now Assistant Professor at University of Bonn)

Hannes Nickisch, Intern 2009 (now at Philips Research), Sara Vicente, Intern 2009, (now Post-doc at QMUL, London), Patrick Pletscher (2010), Min Sun (2011), Stefan Holzer (2011), Simon Fothergill (2011), Anton Osokin (2012), Peter Kotschieder (2012), Giuseppe Ottaviano, Intern 2012, (now at Facebook), Sean Fanello, Intern 2013, (now Researcher at Microsoft Research), Vahid Kazemi, Intern 2014 (now at Google), Abner Guzman Riviera (2013), Matteo Venanzi (2014), Nathan Silberman (2014), Tejas Kulkarni (2014)

Selected Computer Vision and Graphics Projects*

1. Human Pose Estimation: RGB (ECCV 06, PAMI 08), Kinect (ICCV 11, CVPR 12, PAMI 13)
2. Real time 3D Reconstruction – Kinect Fusion (ISMAR 11, UIST 11), Shape priors (ICVGIP 2006)
3. 3D Scene Understanding – Semantic Paint (TOG 2015), Spatial Inference Machines (CVPR 2014)
4. Text detection and recognition in the Wild (ECCV 2012, ICDAR 2013)
5. Intelligent Interactive Systems/ Gesture Recognition (ICVGIP 2010, IJCV 2012, CHI 2012)
6. Scene Understanding & Object Detection (CVPR08, ICCV09, CVPR 10, ECCV10, ECCV12a & b)
7. Low-level vision – Segmentation, Flow, Stereo (SIGGRAPH08, CVPR10, CVPR11, Eurographics 12)
8. Richer higher order MRFs for Image Labelling (CVPR07, CVPR08, CVPR 09, ICCV 09, CVPR 10, ECCV 10)

* See videos on the [Youtube research channel](#)

Selected Machine Learning Projects

1. Learning Deep Disentangled Knowledge Representation for Vision (To appear)
2. Probabilistic Programming for Vision (CVPR15, AISTATS15)
3. Learning to Invert Generative Procedures (3DV 2014, CVPR 2014, CHI 2015)
4. Learning to perform Program Verification
5. Efficient Algorithms for Inference and Optimization (ICCV05, PAMI07, PAMI08, ICML12, CVPR 12a&b)
6. Adaptive Algorithms for Inference (AISTATS 2012, ICML 2012)
7. Learning to make multiple predictions (NIPS 2013, AAAI 2013)
8. Efficient approaches to structured output learning (AISTATS 2013, AISTATS 2012, ECCV 2008)

Selected Games Theory, Crowdsourcing, User Understanding Projects

1. Project Waterloo: Understanding Strategic Interaction through a Facebook Game
2. Understanding Personality and Online Behavior (Facebook, Search Logs)
3. Adaptive Crowd-sourcing by modelling worker reliability
4. Incorporating Context in Recommendations Systems

Selected Invited Talks/Tutorials

1. Developments in Human Pose Estimation/Gesture Recognition for Kinect. Invited talk in the ECCV 2012 Workshop on Consumer Depth Cameras for Computer Vision.
2. Learning to Interact with Humans. Invited talk in the Third IEEE International Workshop on Computer Vision for Computer Games. CVPR 2012.
3. Exploiting Problem Structure for Efficient Discrete Optimization. Invited talk in the NIPS Workshop on Discrete Optimization in Machine Learning (DISCML) 2011
4. MAP Inference in Discrete Models. Invited Tutorial in IBPRIA 2011.
5. Learning and Evaluating Interactive Segmentation Systems. Invited talk in the NIPS 2009 Workshop on Analysis and Design of Algorithms for Interactive Machine Learning.
6. Tutorials in ECCV 2008, ICCV 2009, MICCAI 2010, ICGIP 2010.

PUBLICATION LIST

Edited Books

Lucas Bordeaux, Youssef Hamadi, Pushmeet Kohli
Tractability: Practical Approaches to Hard Problems
Cambridge University Press 2013

Andrew Blake, Pushmeet Kohli, Carsten Rother
Markov Random Fields for Vision and Image Processing
MIT press 2011

PhD Dissertation

Minimizing Dynamic and Higher order Energy Functions using Graph Cuts (2007)

Winner, BMVA Doctoral Thesis Award

Runner-up, CPHC/BCS Distinguished Dissertation Award

Book Chapters

1. Pushmeet Kohli, Jamie Shotton. Key Developments in Human Pose Estimation for Kinect. In Consumer Depth Cameras for Computer Vision (Editors: Fossati, Gall, Helmut, Ren, Konolige)
2. Pushmeet Kohli, Carsten Rother. Higher-order Models in Computer Vision. In: Image Processing and Analysis with Graphs (Editors: Olivier Lézoray and Leo Grady). CRC Press 2012
3. Andrew Blake. Pushmeet Kohli. Introduction to MRFs. In Markov Random Fields for Vision and Image Processing. MIT Press 2011.
4. Martin Szummer, Pushmeet Kohli, Derek Hoiem. Learning large-margin random fields using graph cuts. In Markov Random Fields for Vision and Image Processing. MIT Press 2011.
5. Pushmeet Kohli, Lubor Ladicky, Philip Torr. Enforcing label consistency using Higher-order potentials. In Markov Random Fields for Vision and Image Processing. MIT Press 2011.
6. Pushmeet Kohli, Philip Torr. Dynamic Graph Cuts and Their Applications in Computer Vision. In: Cipolla et al. Studies in Computational Intelligence. Springer Berlin / Heidelberg (2010)

Peer-Reviewed Journal Papers

1. Julien Valentin, Vibhav Vineet, Ming Cheng, David Kim, Jamie Shotton, Pushmeet Kohli, Matthias Niessner, Antonio Criminisi, Shahram Izadi and Phil Torr. SemanticPaint: Interactive 3D Labeling and Learning at your Finger tips. In TOG 2015.
2. Sungwoong Kim, Chang D. Yoo, Sebastian Nowozin, Pushmeet Kohli. Image Segmentation Using Higher-Order Correlation Clustering. In: PAMI 2014.
3. Yongsub Lim, Kyomin Jung, and Pushmeet Kohli. Efficient Energy Minimization for Enforcing Statistics. In PAMI 2014.
4. Min Sun, Byung-soo Kim, Pushmeet Kohli, and Silvio Savarese. Relating Things and Stuff via Object Property Interactions. In PAMI 2014.
5. Lubor Ladicky, Chris Russell, Pushmeet Kohli, Philip Torr. Associative Hierarchical Random Fields. In: PAMI 2013.
6. Jamie Shotton, Ross Girshick, Andrew Fitzgibbon, Toby Sharp, Mat Cook, Mark Finocchio, Richard Moore, Pushmeet Kohli, Antonio Criminisi, Alex Kipman, and Andrew Blake. Efficient Human Pose Estimation from Single Depth Images. PAMI 2013
7. Lubor Ladicky, Chris Russell, Pushmeet Kohli, Philip Torr. Inference Methods for CRFs with Co-occurrence Statistics. In: IJCV 2013
8. Michal Kosinski, Yoram Bachrach, Pushmeet Kohli, David Stillwell, Thore Graepel. Manifestations of user personality in website choice and behaviour on online social networks. In: Machine Learning 2013.
9. Pushmeet Kohli, Hannes Nickisch, Carsten Rother, Christoph Rhemann: User-Centric Learning and Evaluation of Interactive Segmentation Systems. IJCV 2012.
10. Elena Tretyak, Olga Barinova, Pushmeet Kohli, Victor S. Lempitsky: Geometric Image Parsing in Man-Made Environments. IJCV 2012.

11. Olga Barinova, Victor S. Lempitsky, Pushmeet Kohli: On Detection of Multiple Object Instances Using Hough Transforms. PAMI 2012.
12. Sungwoong Kim, Sebastian Nowozin, Pushmeet Kohli, Chang D. Yoo. Task-Specific Image Partitioning. In: IEEE Transactions on Image Processing 2012.
13. Karteek Alahari, Pushmeet Kohli, Philip Torr. Dynamic Hybrid Algorithms for MAP Inference in Discrete MRFs. PAMI 2010.
14. Pushmeet Kohli, Lubor Ladicky and Philip H. S. Torr. Robust Higher Order Potentials for Enforcing Label Consistency. IJCV 2009.
15. Alex Rav-Acha, Pushmeet Kohli, Andrew W. Fitzgibbon, and Carsten Rother. "Unwrap Mosaics": A new representation for video editing. ACM Transactions on Graphics (SIGGRAPH) 2008.
16. Pushmeet Kohli, M. P. Kumar and Philip H. S. Torr. Move Making Algorithms for Solving Higher Order Energy Functions. PAMI 2008.
17. Pushmeet Kohli, Mathieu Bray and Philip H. S. Torr: Simultaneous Segmentation and Pose Estimation of Humans. IJCV 2008.
18. Pushmeet Kohli and Philip H. S. Torr: Measuring Uncertainty in Graph Cut Solutions. Journal of Computer Vision and Image Understanding (CVIU): Special Issue on Discrete Optimization in Computer Vision 2008
19. Pushmeet Kohli and Philip H. S. Torr: Dynamic Graph Cuts for Efficient Inference in Markov Random Fields. PAMI 2007

Peer-Reviewed Conference Papers

1. Tejas Kulkarni, Will Whitney, Pushmeet Kohli, and Joshua Tenenbaum. Deep Convolutional Inverse Graphics Network. In NIPS 2015.
2. Mohammad Norouzi, Maxwell Collins, David Fleet, and Pushmeet Kohli. Efficient Non-greedy Optimization of Decision Trees and Forests. In NIPS 2015.
3. Danhang Tang, Jonathan Taylor, Pushmeet Kohli, Cem Keskin, T-K. Kim, and Jamie Shotton. Opening the Black Box: Hierarchical Sampling Optimization for Estimating Human Hand Pose. In ICCV 2015.
4. Peter Ondruska, Pushmeet Kohli, and Shahram Izadi. MobileFusion: Real-time Volumetric Surface Reconstruction and Dense Tracking On Mobile Phones. In ISMAR 2015.
5. Andrew V. Goldberg, Sagi Hed, Haim Kaplan, Pushmeet Kohli, Robert Tarjan, and Renato Werneck. Faster and More Dynamic Maximum Flow by Incremental Breadth-First Search. In ESA 2015.
6. Adrian Kim, Kyomin Jung, Yongsub Lim, Daniel Tarlow, and Pushmeet Kohli. Minimizing Expected Losses in Perturbation Models with Multidimensional Parametric Min-cuts. In UAI 2015.
7. Adish Singla, Eric Horvitz, Pushmeet Kohli, Ryen White, and Andreas Krause. Information Gathering in Networks via Active Exploration. In IJCAI 2015.
8. Peter Ondruska, Pushmeet Kohli, Shahram Izadi. Mobile Fusion. ISMAR 2015
9. Tejas Kulkarni, Pushmeet Kohli, Joshua Tenenbaum, Vikash Mansinghka. Picture: A Probabilistic Programming Language for Scene Perception. **(Runner-up, Best Paper Award)** In CVPR 2015.
10. Mohammad Rastegari, Cem Keskin, Pushmeet Kohli, Shahram Izadi. Computationally Bounded Retrieval. In CVPR 2015.
11. Yan Xia, Kaiming He, Pushmeet Kohli, Jian Sun. Sparse Projections for High-Dimensional Binary Codes. In CVPR 2015.
12. Julien Valentin, Vibhav Vineet, Ming Cheng, David Kim, Jamie Shotton, Pushmeet Kohli, Matthias Niessner, Antonio Criminisi, Shahram Izadi and Phil Torr. SemanticPaint: Interactive 3D Labeling and Learning at your Finger tips. In TOG 2015.
13. Adrian Kim, Kyomin Jung, Yongsub Lim, Daniel Tarlow, and Pushmeet Kohli. Minimizing Expected Losses in Perturbation Models with Multidimensional Parametric Min-cuts. In UAI 2015.
14. Andrew V. Goldberg, Sagi Hed, Haim Kaplan, Pushmeet Kohli, Robert Tarjan, and Renato Werneck. Faster and More Dynamic Maximum Flow by Incremental Breadth-First Search. In European Symposium on Algorithms 2015
15. Toby Sharp, Cem Keskin, Duncan Robertson, Jonathan Taylor, Jamie Shotton, David Kim, Christoph Rhemann, Ido Leichter, Alon Vinnikov, Yichen Wei, Daniel Freedman, Pushmeet Kohli, Eyal Krupka, Andrew Fitzgibbon, Shahram Izadi. Accurate, Robust, and Flexible Real-time Hand Tracking. In: CHI 2015. **(Runner-up, Best Paper Award)**

16. Edwin Simpson, Matteo Venanzi, Pushmeet Kohli, John Guiver, Steven Reece, Stephen Roberts and Nick Jennings. Crowdsourcing Language Understanding in the Wild. In: WWW 2015.
17. Varun Jampani, Ali Eslami, Daniel Tarlow, Pushmeet Kohli and John Winn. Consensus Message Passing for Layered Graphical Models. In: AISTATS 2015.
18. Roman Shapovalov, Dmitry Vetrov, Anton Osokin, Pushmeet Kohli. Multi-utility Learning: Structured-output Learning with Multiple Annotation-specific Loss Functions. In: EMMCVPR 2015.
19. Ali Eslami, Daniel Tarlow, Pushmeet Kohli and John Winn. Just-In-Time Learning for Fast and Flexible Inference. In NIPS 2014.
20. Ran Gal, Lior Shapira, Eyal Ofek, Pushmeet Kohli. FLARE: Fast layout for augmented reality applications. In: ISMAR 2014.
21. Vahid Kazemi, Cem Keskin, Jonathan Taylor, Pushmeet Kohli and Shahram Izadi. Real-time Face Reconstruction from a Single Depth Image. In 3DV 2014.
22. Samunda Perera, Nick Barnes, Xuming He, Shahram Izadi, Pushmeet Kohli and Ben Glocker. Motion Segmentation of Truncated Signed Distance Function based Volumetric Surfaces. In WACV 2014.
23. Allison Chaney, Mike Gartrell, Jake M. Hofman, John Guiver, Noam Koenigstein, Pushmeet Kohli, and Ulrich Paquet. A Large-scale Exploration of Group Viewing Patterns. In TVX 2014. **(Runner-up, Best Paper Award)**
24. Matteo Venanzi, John Guiver, Gabriella Kazai, Pushmeet Kohli, and Milad Shokouhi. Community-Based Bayesian Aggregation Models for Crowdsourcing. In WWW 2014. **(Runner-up, Best Paper Award)**
25. Nathan Silberman, Lior Shapira, Ran Gal, Pushmeet Kohli. A Contour Completion Model for Augmenting Surface Reconstructions. In: ECCV 2014.
26. Anton Osokin, Pushmeet Kohli. Perceptually Inspired Layout-aware Losses for Image Segmentation. In: ECCV 2014.
27. Pablo Marquez-Neila, Pushmeet Kohli, Carsten Rother, and Luis Baumela. Non-parametric Higher-order Random Fields for Image Segmentation. In: ECCV 2014.
28. Sean Fanello, Cem Keskin, Shahram Izadi, Pushmeet Kohli, David Kim, David Sweeney, Antonio Criminisi, Jamie Shotton, Sing Bing Kang, and Tim Paek. Learning to be a depth camera for close-range human capture and interaction. In SIGGRAPH 2014.
29. Ling Shao, Jungong Han, Pushmeet Kohli, Zhengyou Zhang. Computer Vision and Machine Learning with RGB-D Sensors. Springer Edited Volume 2014.
30. Hassan Mahmud, Benjamin Rosman, Subramanian Ramamoorthy, Pushmeet Kohli. Adapting interaction environments to diverse users through online action set selection. In: AAAI-MLIS 2014.
31. Abner Guzmán-Rivera, Pushmeet Kohli, Ben Glocker, Jamie Shotton, Toby Sharp, Andrew Fitzgibbon, Shahram Izadi. Multi-Output Learning for Camera Relocalization. In CVPR 2014.
32. Angela Yao, Pushmeet Kohli, Luc van Gool. Gesture Recognition Portfolios for Personalization. In CVPR 2014.
33. Sean Ryan Fanello, Cem Keskin, Pushmeet Kohli, Shahram Izadi, Jamie Shotton, Antonio Criminisi, Ugo Pattacini, Tim Paek. Filter Forests for Learning Data-Dependent Convolutional Kernels. In CVPR 2014.
34. Christian Kurz, Xiaokun Wu, Michael Wand, Thorsten Thormählen, Pushmeet Kohli, Hans-Peter Seidel. Symmetry-Aware Template Deformation and Fitting. In Computer Graphics Forum 2014.
35. Xiaokun Wu, Michael Wand, Klaus Hildebrandt, Pushmeet Kohli, Hans-Peter Seidel. Real-Time Symmetry-Preserving Deformation. In Computer Graphics Forum 2014.
36. Abner Guzmán-Rivera, Pushmeet Kohli, Dhruv Batra, Rob Rutenbar. Efficiently Enforcing Diversity in Multi-Output Structured Prediction. In AISTATS 2014.
37. Abigail See, Yoram Bachrach, Pushmeet Kohli. The Cost of Principles: Analyzing power in Compatibility Weighted Voting Games. In: AAMAS 2014.
38. Benjamin Rosman, Subramanian Ramamoorthy, Hassan Mahmud, Pushmeet Kohli. On User Behaviour Adaptation Under Interface Change. In: IUI 2014.
39. Byung-soo Kim, Pushmeet Kohli, and Silvio Savarese. 3D Scene Understanding by Voxel-CRF. In: ICCV 2013.
40. Jamie Shotton, Toby Sharp, Pushmeet Kohli, Sebastian Nowozin, John Winn, Antonio Criminisi. Decision Jungles: Compact and Rich Models for Classification. In: NIPS 2013.
41. Sergey Milyaev, Olga Barinova, Tatiana Novikova, Victor Lempitsky, Pushmeet Kohli. Image binarization for end-to-end text understanding in natural images. In: ICDAR 2013.
42. Pushmeet Kohli, Mahyar Salek, Greg Stoddard. A Fast Bandit Algorithm for Recommendations to Users with Heterogenous Tastes. In: AAAI 2013.

43. Yoram Bachrach, Pushmeet Kohli, Vladimir Kolmogorov, Morteza Zadimoghaddam. Optimal Coalition Structures in Cooperative Graph Games. In: AAAI 2013.
44. Abner Guzmán-Rivera, Pushmeet Kohli, Dhruv Batra. Faster Training of Structural SVMs with Diverse M-Best Cutting-Planes. In: AISTATS 2013.
45. Pushmeet Kohli, Anton Osokin, Stefanie Jegelka. A Deep Random Field Model for Image Segmentation. In: CVPR 2013.
46. Peter Kotschieder, Pushmeet Kohli, Jamie Shotton, Antonio Criminisi. GeoF: Geodesic Forests for Learning Coupled Predictors. In: CVPR 2013.
47. Roman Shapovalov, Dmitry Vetrov, Pushmeet Kohli. Spatial Inference Machines. In: CVPR 2013.
48. Giuseppe Ottaviano, Pushmeet Kohli. Compressible Motion Fields In: CVPR 2013.
49. Abner Guzmán-Rivera, Pushmeet Kohli, Dhruv Batra. Faster Training of Structural SVMs with Diverse M-Best Cutting-Planes. In: AISTATS 2013
50. Abner Guzmán-Rivera, Dhruv Batra, Pushmeet Kohli. Multiple Choice Learning: Learning to Produce Multiple Structured Outputs. In: NIPS 2012.
51. Peter Kotschieder, Samuel Bulò, Antonio Criminisi, Pushmeet Kohli, Marcello Pelillo, Horst Bischof. Context-Sensitive Decision Forests for Object Detection. In: NIPS 2012.
52. Christopher Zach, Pushmeet Kohli. A Convex Discrete-Continuous Approach for Markov Random Fields. In: ECCV 2012.
53. Tatiana Novikova, Olga Barinova, Pushmeet Kohli, Victor Lempitsky. Large-Lexicon Attribute-Consistent Text Recognition in Natural Images. In: ECCV 2012.
54. Stefan Holzer, Jamie Shotton, Pushmeet Kohli. Learning to Efficiently Detect Repeatable Interest Points in Depth Data. In: ECCV 2012.
55. Nima Razavi, Jurgen Gall, Pushmeet Kohli, Luc Van Gool. Latent Hough Transforms for Object Detection. In: ECCV 2012.
56. Nathan Silberman, Derek Hoiem, Pushmeet Kohli, Rob Fergus. Indoor Segmentation and Support Inference from RGBD Images. In: ECCV 2012.
57. Alexander Shekhovtsov, Pushmeet Kohli, Carsten Rother. Curvature Prior for MRF-Based Segmentation and Shape Inpainting. In: DAGM 2012
58. Pushmeet Kohli, Yoram Bachrach, David Stillwell, Michael Kearns, Ralf Herbrich, Thore Graepel. Colonel Blotto On Facebook: The Effect of Social Relations On Strategic Interaction. In: ACM Web Sciences 2012.
59. Michal Kosinski, David Stillwell, Pushmeet Kohli, Yoram Bachrach, Thore Graepel. Personality and Website Choice. In: ACM Web Sciences 2012.
60. Yoram Bachrach, Michal Kosinski, Thore Graepel, Pushmeet Kohli, David Stillwell. Personality and Patterns of Facebook Usage. In: ACM Web Sciences 2012.
61. Min Sun, Pushmeet Kohli, Jamie Shotton. Conditional Regression Forests for Human Pose Estimation. In: CVPR 2012.
62. Simon Fothergill, Helena Mentis, Pushmeet Kohli, Sebastian Nowozin. Instructing People for Training Gestural Interactive Systems. CHI 2012.
63. Patrick Pletscher, Pushmeet Kohli. Learning Low-order Models for Enforcing High-order Statistics. In: AISTATS 2012.
64. Michael W. Tao, Jiamin Bai, Pushmeet Kohli, Sylvain Paris. SimpleFlow: A Non-iterative, Sublinear Optical Flow Algorithm. In: Eurographics 2012.
65. Sungwoong Kim, Sebastian Nowozin, Pushmeet Kohli, Chang Yoo. Higher-Order Correlation Clustering for Image Segmentation. In: NIPS 2011.
66. Sebastian Nowozin, Carsten Rother, Shai Bagon, Toby Sharp, Bangpeng Yao, Pushmeet Kohli. Decision Tree Fields. In: ICCV 2011.
67. Ross Girshick, Jamie Shotton, Pushmeet Kohli, Antonio Criminisi, Andrew Fitzgibbon. Efficient Regression of General-Activity Human Poses from Depth Images. In: ICCV 2011.
68. Shahram Izadi, David Kim, Otmar Hilliges, David Molyneaux, Richard Newcombe, Steve Hodges, Pushmeet Kohli, Jamie Shotton, Andrew Davison, Andrew Fitzgibbon. KinectFusion: Real-Time Interactions with Dynamic 3D Surface Reconstructions. In: UIST 2011.
69. Richard Newcombe, Shahram Izadi, Otmar Hilliges, David Molyneaux, David Kim, Andrew Davison, Pushmeet Kohli, Jamie Shotton, Steve Hodges, Andrew Fitzgibbon. KinectFusion: Real-time 3D Reconstruction and Interaction Using a Moving Depth Camera. In: ISMAR 2011. **(Best Paper Award)**
70. Alexander Mansfield, Mukta Prasad, Carsten Rother, Toby Sharp, Pushmeet Kohli and Luc Van Gool. Transforming Image Completion. In: BMVC 2011.

71. Daniel Tarlow, Dhruv Batra, Pushmeet Kohli, Vladimir Kolmogorov. Dynamic Tree Block Coordinate Ascent. In: ICML 2011.
72. Patrick Pletscher, Sebastian Nowozin, Pushmeet Kohli, Carsten Rother. Putting MAP back on the map. In: DAGM 2011.
73. Michael Bleyer, Carsten Rother, Pushmeet Kohli, Daniel Scharstein, Sudipta Sinha. Object Stereo— Joint Stereo Matching and Object Segmentation. In: CVPR 2011.
74. Taesup Kim, Sebastian Nowozin, Pushmeet Kohli, Chang Yoo. Variable Grouping for Energy Minimization. In: CVPR 2011.
75. Dhruv Batra, Pushmeet Kohli. Making the Right Moves: Guiding Alpha-Expansion using Local Primal-Dual Gaps. In: CVPR 2011.
76. Dhruv Batra, Sebastian Nowozin, Pushmeet Kohli. Tighter Relaxations for MAP-MRF Inference: A Local Primal-Dual Gap based Separation Algorithm. In: AISTATS 2011.
77. Yoram Bachrach, Pushmeet Kohli, Vladimir Kolmogorov. Team Coverage Games. In: AAMAS 2011
78. Yoram Bachrach, Pushmeet Kohli, Thore Graepel. Rip-off: Playing the Cooperative Negotiation Game. In: AAMAS 2011 .
79. Pushmeet Kohli, Victor Lempitsky, Carsten Rother. Uncertainty Driven Multi-scale Optimization. In: DAGM 2010.
80. Chris Russell, Lubor Ladicky, Pushmeet Kohli, Philip Torr. Graph Cut based Inference with Co-occurrence Statistics. ECCV 2010. **(Best Paper Award)**
81. Yongsub Lim, Kyomin Jung, Pushmeet Kohli. Energy Minimization Under Constraints on Label Counts. ECCV 2010.
82. Ben Glocker, Hauke Heibel, Nassir Navab, Pushmeet Kohli, Carsten Rother. TriangleFlow: Optical Flow with Triangulation-based Higher-Order Likelihoods. ECCV 2010.
83. Olga Barinova, Victor Lempitsky, Elena Tretyak, Pushmeet Kohli. Geometric Image Parsing in Man-Made Environments. ECCV 2010.
84. Chris Russell, Lubor Ladicky, Pushmeet Kohli, Philip Torr. Exact and Approximate Inference in Associative Hierarchical Random Fields using Graph-Cuts. In: UAI 2010.
85. Yoram Bachrach, Reshef Meir, Kyomin Jung, Pushmeet Kohli. Optimal Coalition Structures in Skill Games. AAAI 2010
86. Olga Barinova, Victor Lempitsky, Pushmeet Kohli. On Detection of Multiple Object Instances using Hough Transforms. CVPR 2010
87. Pushmeet Kohli, M Pawan Kumar. Energy Minimization for Linear Envelope MRFs. CVPR 2010.
88. Michael Bleyer, Carsten Rother, Pushmeet Kohli. Surface Stereo with Soft Segmentation. CVPR 2010.
89. Christoph Rhemann, Carsten Rother, Pushmeet Kohli, Margrit Gelautz. A Spatially Varying PSF-based Prior for Alpha Matting. CVPR 2010.
90. Kyomin Jung, Pushmeet Kohli, Devavrat Shah. Local Rules for Global MAP: When Do They Work? NIPS 2009
91. Victor Lempitsky, Pushmeet Kohli, Carsten Rother, Toby Sharp. Image Segmentation with a Bounding Box Prior. ICCV 2009.
92. Lubor Ladicky, Chris Russell, Pushmeet Kohli, Philip Torr. Associative Hierarchical CRFs for Object Class Image Segmentation. ICCV 2009.
93. Carsten Rother, Pushmeet Kohli, Wei Feng, Jiaya Jia. Minimizing Sparse Higher Order Energy Functions of Discrete Variables. CVPR 2009.
94. Christoph Rhemann, Carsten Rother, Jue Wang, Margrit Gelautz, Pushmeet Kohli, Pamela Rott. A Perceptually Motivated Online Benchmark for Image Matting. CVPR 2009.
95. Martin Szummer, Pushmeet Kohli, and Derek Hoiem. Learning CRFs using Graph Cuts. ECCV 2008.
96. Pushmeet Kohli, Alexander Shekhovtsov, Carsten Rother, Vladimir Kolmogorov, Philip Torr. On Partial Optimality in Multi-label MRFs. ICML 2008.
97. Pushmeet Kohli, Lubor Ladicky and Philip H. S. Torr. Robust Higher Order Potentials for Enforcing Label Consistency. CVPR 2008.
98. Srikumar Ramalingam, Pushmeet Kohli, Karteek Alahari and Philip H. S. Torr. Exact Inference in Multi-label CRFs with Higher Order Cliques. CVPR 2008.
99. Karteek Alahari, Pushmeet Kohli, and Philip H. S. Torr. Reduce, Reuse & Recycle: Efficiently Solving Multi-label MRFs. CVPR 2008.
100. Pushmeet Kohli, M Pawan Kumar and Philip H. S. Torr. P^3 & Beyond: Solving Energies with Higher Order Cliques. CVPR 2007.

101. Pushmeet Kohli and Philip H. S. Torr: Measuring Uncertainty in Graph Cut Solutions. Efficiently Computing Min-marginal energies using Dynamic Graph Cuts. ECCV 2006.
102. Mathieu Bray, Pushmeet Kohli and Philip H. S. Torr: PoseCut: Simultaneous Segmentation and Pose Estimation of Humans using Dynamic Graph Cuts. ECCV 2006.
103. Yunda Sun, Pushmeet Kohli, Mathieu Bray and Philip H. S. Torr: Using Strong Shape Priors for Stereo. ICVGIP 2006.
104. Jonathan Rihan, Pushmeet Kohli and Philip H. S. Torr: OBJCUT for Face Detection. ICVGIP 2006.
105. Pushmeet Kohli and Philip H. S. Torr: Efficiently Solving Dynamic Markov random Fields using Graph Cuts. ICCV 2005.
106. Pushmeet Kohli: A Classifier System Based on Evolved Finite State Machines. IICAI 2003

Technical Reports

1. Pushmeet Kohli, Victor Lempitsky, Carsten Rother. Uncertainty Driven Multi-scale Energy Minimization. *Microsoft Research Technical Report* - 2010
2. Margus Veanes; Colin Campbell; Wolfram Schulte; Pushmeet Kohli. On-The-Fly Testing of Reactive Systems. Microsoft Research Technical Report - January 2005 [MSR-TR-2005-05]

Workshop papers

1. Marc Brockschmidt, Yuxin Chen, Byron Cook, Pushmeet Kohli, and Daniel Tarlow. Learning to Decipher the Heap for Program Verification. **Best Paper Award**. In Constructive ML Workshop at ICML 2015.
2. Abner Guzman-Rivera, Pushmeet Kohli, Dhruv Batra. Faster Training of Structural SVMs with Diverse M-Best Cutting-Planes. NIPS 2012 Workshop on Discrete Optimization in Machine Learning (DISCML).
3. Byung-soo Kim, Min Sun, Pushmeet Kohli, and Silvio Savarese. Relating Things and Stuff by High-Order Potential Modeling. In ECCV 2012 workshop on Higher-Order Models.
4. Stephan Meister, Shahram Izadi, Pushmeet Kohli, Martin Hammerle, Carsten Rother, and Daniel Kondermann. When Can We Use KinectFusion for Ground Truth Acquisition? IROS, 2012
5. Yongsub Lim, Kyomin Jung, and Pushmeet Kohli, Constrained Discrete Optimization via Dual Space Search, NIPS Workshop on Discrete Optimization on Machine Learning (DISCML) 2011

Patents

1. Using browsing behavior for access control
2. Model fitting to raw time of flight data
3. Efficient region of interest detection in ToF images
4. Just-In-Time Learning for Fast and Flexible Inference
5. Tracking Articulated Entities by Predicting Distributions for a Stochastic Optimizer
6. Community-based Active Crowdsourcing
7. Layout Design using locally satisfiable proposals
8. Multi-Output Learning for Camera Relocalization
9. Filter Forests for Learning Data-Dependent Convolutional Kernels
10. Non-greedy learning of decision forest classifiers
11. Depth for Free - RGB
12. Depth for Free
13. Hallucinating unseen geometry
14. Community-based Bayesian Aggregation Model for Crowdsourcing
15. Estimating aggregate personality of website audiences & user groups
16. Discriminative Decision Tree Fields for Classification
17. Conditional Regression/Classification for Human Pose Estimation
18. Learning from 3D Reconstructions
19. Proposing and Segmenting Scene Surfaces from RGB and Depth Images
20. Estimating aggregate personality of website audiences & user groups
21. Scanning Hand-Held Objects in 3D
22. Multi-touch interactions using Kinect
23. Generating Synthetic Training Data for Object Detection and Segmentation
24. Geometrically correct Image Inpainting
25. Reordering features for efficient classification
26. Predicting joint positions using regressed pixel offsets

27. Improving Classification and Regression by Estimating Global Parameters
28. Grouping Variables for Fast Image Labelling
29. Human body pose estimation - CIP
30. Detecting and Localizing Multiple Objects in images using Probabilistic Inference
31. Dense Reconstruction
32. Real-time Featureless Camera Tracking
33. SLAM Deck
34. Object Segmentation Using Depth Data
35. SLAM Localization Without Keyframes
36. Uncertainty Driven Multi-scale Energy Minimization
37. Representation for editing of video
38. On the Fly Testing

Details of Referees

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