2020

**Journal Articles**

[J1] V. Usenko, N. Demmel, D. Schubert, J. Stueckler and D. Cremers,
*Visual-Inertial Mapping with Non-Linear Factor Recovery,*

[J2] L. von Stumberg, P. Wenzel, Q. Khan and D. Cremers,
*GN-Net: The Gauss-Newton Loss for Multi-Weather Relocalization,*

**Conference and Workshop Papers**

[C1] M. Eisenberger, Z. Lähner and D. Cremers,
*Smooth Shells: Multi-Scale Shape Registration with Functional Maps,*

[C2] Sang, L., Haefner, B., Cremers and D.,
*Inferring Super-Resolution Depth from a Moving Light-Source Enhanced RGB-D Sensor: A Variational Approach,*

[C3] C. Sommer, V. Usenko, D. Schubert, N. Demmel and D. Cremers,

[C4] R. Wang, N. Yang, J. Stueckler and D. Cremers,
*DirectShape: Photometric Alignment of Shape Priors for Visual Vehicle Pose and Shape Estimation,*

[C5] N. Yang, L. von Stumberg, R. Wang and D. Cremers,
*D3VO: Deep Depth, Deep Pose and Deep Uncertainty for Monocular Visual Odometry,*
2020, *Oral Presentation.*

[C6] S. Weiss, R. Maier, D. Cremers, R. Westermann and N. Thuerey,
*Correspondence-Free Material Reconstruction using Sparse Surface Constraints,*
*IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.
Author: Cremers

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2019

Journal Articles

[J1] F. Pasa, V. Golkov, F. Pfeiffer, D. Cremers and D. Pfeiffer,
Efficient Deep Network Architectures for Fast Chest X-Ray Tuberculosis Screening and Visualization,

[J2] J. Schuchardt, V. Golkov and D. Cremers,
Learning to Evolve,

A Non-invasive 3D Body Scanner and Software Tool towards Analysis of Scoliosis,

[J4] Haefner, B., Peng, S., Verma, A., Queau, Y., Cremers and D.,
Photometric Depth Super-Resolution,

[J5] Brahimi, M., Queau, Y., Haefner, B., Cremers and D.,
On well-posedness of uncalibrated photometric stereo under general lighting,

[J6] Laude, E., Ochs, P., Cremers and D.,
Bregman Proximal Mappings and Bregman-Moreau Envelopes under Relative Prox-Regularity,
2019.

[J7] Mahesh Chandra Mukkamala, Felix Westerkamp, Emanuel Laude, Daniel Cremers and Peter Ochs,
Bregman Proximal Framework for Deep Linear Neural Networks,

Conference and Workshop Papers

[C1] A. Vasilev, V. Golkov, M. Meissner, I. Lipp, E. Sgarlata, V. Tomassini, D. K. Jones and D. Cremers,
q-Space Novelty Detection with Variational Autoencoders,
*MICCAI 2019 International Workshop on Computational Diffusion MRI*, 2019, Oral Presentation.

[C2] P. Swazinna, V. Golkov, I. Lipp, E. Sgarlata, V. Tomassini, D. K. Jones and D. Cremers,
Negative-Unlabeled Learning for Diffusion MRI,
2019.

[C3] T. Möllenhoff and D. Cremers,
Lifting Vectorial Variational Problems: A Natural Formulation based on Geometric Measure Theory and Discrete Exterior Calculus,
2019, Oral Presentation.
[C4] Haefner, B., Ye, Z., Gao, M., Wu, T., Queau, Y., Cremers and D.,
Variational Uncalibrated Photometric Stereo under General Lighting,
*International Conference on Computer Vision (ICCV)*, Seoul, South Korea, October 2019.

[C5] Q. Khan, P. Wenzel, D. Cremers and L. Leal-Taixe,
Towards Generalizing Sensorimotor Control Across Weather Conditions,

[C6] M. Moeller, T. Möllenhoff and D. Cremers,
Controlling Neural Networks via Energy Dissipation,
*International Conference on Computer Vision (ICCV)*, Seoul, South Korea, 2019.

[C7] S. Weiss, R. Maier, R. Westermann, D. Cremers and N. Thuerey,
Sparse Surface Constraints for Combining Physics-based Elasticity Simulation and Correspondence-Free Object Reconstruction,

[C8] D. Schubert, N. Demmel, L. von Stumberg, V. Usenko and D. Cremers,
Rolling-Shutter Modelling for Visual-Inertial Odometry,
November 2019.

[C9] P. Brechet, T. Wu, T. Möllenhoff and D. Cremers,
Informative GANs via Structured Regularization of Optimal Transport,

2018
Journal Articles

[J1] J. Engel, V. Koltun and D. Cremers,
Direct Sparse Odometry,
March 2018.

[J2] N. Yang, R. Wang, X. Gao and D. Cremers,
Challenges in Monocular Visual Odometry: Photometric Calibration, Motion Bias and Rolling Shutter Effect,

[J3] Queau, Y., Durix, B., Wu, T., Cremers, D., Lauze, F., Durou and J.-D.,
LED-based Photometric Stereo: Modeling, Calibration and Numerical Solution,

[J4] P. Bergmann, R. Wang and D. Cremers,
Online Photometric Calibration of Auto Exposure Video for Realtime Visual Odometry and SLAM,

[J5] E. Aljalbout, V. Golkov, Y. Siddiqui, M. Strobel and D. Cremers,
Clustering with Deep Learning: Taxonomy and New Methods,
[J6] L. Ma, J. Stueckler, T. Wu and D. Cremers,
Detailed Dense Inference with Convolutional Neural Networks via Discrete Wavelet Transform,
Aug 2018.

[J7] Tjaden, Henning, Schwanecke, Ulrich, Schömer, Elmar, Cremers and Daniel,
A Region-based Gauss-Newton Approach to Real-Time Monocular Multiple Object Tracking,

Conference and Workshop Papers

[C1] Caner Hazirbas, Sebastian Georg Soyer, Maximilian Christian Staab, Laura Leal-Taixe and Daniel Cremers,
Deep Depth From Focus,
Asian Conference on Computer Vision (ACCV), December 2018.

[C2] E. Laude, T. Wu and D. Cremers,
A Nonconvex Proximal Splitting Algorithm under Moreau-Yosida Regularization,
International Conference on Artificial Intelligence and Statistics (AISTATS), 2018.

[C3] T. Möllenhoff, Z. Ye, T. Wu and D. Cremers,
Combinatorial Preconditioners for Proximal Algorithms on Graphs,
International Conference on Artificial Intelligence and Statistics (AISTATS), 2018.

q-Space Novelty Detection in Short Diffusion MRI Scans of Multiple Sclerosis, 2018.

q-Space Deep Learning for Alzheimer’s Disease Diagnosis: Global Prediction and Weakly-Supervised Localization,
2018.

[C6] B. T. Do, V. Golkov, G. E. Gürel and D. Cremers,
Precursor microRNA Identification Using Deep Convolutional Neural Networks,
2018.

[C7] P. Haeusser, J. Plapp, V. Golkov, E. Aljalbout and D. Cremers,
Associative Deep Clustering - Training a Classification Network with no Labels,
Proc. of the German Conference on Pattern Recognition (GCPR), October 2018.

[C8] Nikolaus Mayer, Eddy Ilg, Philipp Fischer, Caner Hazirbas, Daniel Cremers, Alexey Dosovitskiy and Thomas Brox,
What Makes Good Synthetic Training Data for Learning Disparity and Optical Flow Estimation?,
September 2018.
[C9] T. Frerix, T. Möllenhoff, M. Moeller and D. Cremers,  
**Proximal Backpropagation**,  

[C10] L. von Stumberg, V. Usenko and D. Cremers,  
**Direct Sparse Visual-Inertial Odometry using Dynamic Marginalization**,  
May 2018.

**The TUM VI Benchmark for Evaluating Visual-Inertial Odometry**,  
October 2018.

[C12] X. Gao, R. Wang, N. Demmel and D. Cremers,  
**LDSO: Direct Sparse Odometry with Loop Closure**,  
*iros*, October 2018.

[C13] Z. Lähner, D. Cremers and T. Tung,  
**DeepWrinkles: Accurate and Realistic Clothing Modeling**,  
September 2018, *Oral Presentation*.

[C14] D. Schubert, N. Demmel, V. Usenko, J. Stueckler and D. Cremers,  
**Direct Sparse Odometry With Rolling Shutter**,  
September 2018, *Oral Presentation*.

[C15] V. Usenko, N. Demmel and D. Cremers,  
**The Double Sphere Camera Model**,  

[C16] I. Chiotellis, F. Zimmermann, D. Cremers and R. Triebel,  
**Incremental Semi-Supervised Learning from Streams for Object Classification**,  

[C17] P. Wenzel, Q. Khan, D. Cremers and L. Leal-Taixe,  
**Modular Vehicle Control for Transferring Semantic Information Between Weather Conditions Using GANs**,  
*Conference on Robot Learning (CoRL)*, 2018.

[C18] Haefner, B., Queau, Y., Möllenhoff, T., Cremers and D.,  
**Fight ill-posedness with ill-posedness: Single-shot variational depth super-resolution from shading**,  

2017  
**Journal Articles**

[J1] V. Golkov, M. J. Skwark, A. Mirchev, G. Dikov, A. R. Geanes, J. Mendenhall, J. Meiler and D. Cremers,  
**3D Deep Learning for Biological Function Prediction from Physical Fields**,  

**Tau Like Proteins Reduce Torque Generation in Microtubule Bundles**,  
[J3] J. Kukacka, V. Golkov and D. Cremers,
Regularization for Deep Learning: A Taxonomy,

Conference and Workshop Papers
[C1] M. Jaimez, T. J. Cashman, A. Fitzgibbon, J. Gonzalez-Jimenez and D. Cremers,
An Efficient Background Term for 3D Reconstruction and Tracking with Smooth Subdivision Surface Models,
2017.
[C2] L. Ma, J. Stueckler, C. Kerl and D. Cremers,
Multi-View Deep Learning for Consistent Semantic Mapping with RGB-D Cameras,
Vancouver, Canada, Sep 2017.
[C3] Vestner, M., Litman, R., Rodola, E., Bronstein, A., Cremers and D.,
Product Manifold Filter: Non-Rigid Shape Correspondence via Kernel Density Estimation in the Product Space,
2017.
[C4] M. Dzitsiuk, J. Sturm, R. Maier, L. Ma and D. Cremers,
De-noising, Stabilizing and Completing 3D Reconstructions On-the-go using Plane Priors,
[C5] L. von Stumberg, V. Usenko, J. Engel, J. Stueckler and D. Cremers,
From Monocular SLAM to Autonomous Drone Exploration,
European Conference on Mobile Robots (ECMR), September 2017.
[C6] Florian Walch, Caner Hazirbas, Laura Leal-Taixe, Torsten Sattler, Sebastian Hilsenbeck and Daniel Cremers,
Image-based localization using LSTMs for structured feature correlation,
October 2017.
Establishment of an interdisciplinary workflow of machine learning-based Radiomics in sarcoma patients,
[C8] Queau, Y., Pizenberg, M., Durou, J.-D., Cremers and D.,
Microgeometry capture and RGB albedo estimation by photometric stereo without demosaicing,
International Conference on Quality Control by Artificial Vision (QCAV), 2017.
[C9] P. Haeusser, A. Mordvintsev and D. Cremers,
Learning by Association - A versatile semi-supervised training method for neural networks,
2017.
[C10] V. Usenko, L. von Stumberg, A. Pangercic and D. Cremers,
Real-Time Trajectory Replanning for MAVs using Uniform B-splines and a 3D Circular Buffer,
Vancouver, Canada, Sep 2017.
[C11] Tim Meinhardt, Michael Moeller, Caner Hazirbas and Daniel Cremers, 
Learning Proximal Operators: Using Denoising Networks for Regularizing Inverse Imaging Problems, 
October 2017.

One-Shot Video Object Segmentation, 
Honolulu, USA, 2017.

[C13] Queau, Y., Melou, J., Durou, J.-D., Cremers and D., 
Dense Multi-view 3D-reconstruction Without Dense Correspondences, 

[C14] P. Haeusser, T. Frerix, A. Mordvintsev and D. Cremers, 
Associative Domain Adaptation, 
2017.

Efficient Deformable Shape Correspondence via Kernel Matching, 
International Conference on 3D Vision (3DV), Qingdao, China, October 2017, Oral Presentation.

[C16] R. Maier, K. Kim, D. Cremers, J. Kautz and M. Niessner, 
Intrinsic3D: High-Quality 3D Reconstruction by Joint Appearance and Geometry Optimization with Spatially-Varying Lighting, 
International Conference on Computer Vision (ICCV), Venice, Italy, October 2017.

[C17] T. Möllenhoff and D. Cremers, 
Sublabel-Accurate Discretization of Nonconvex Free-Discontinuity Problems, 
International Conference on Computer Vision (ICCV), Venice, Italy, October 2017.

[C18] Queau, Y., Melou, J., Castan, F., Cremers, D., Durou and J.-D., 
A Variational Approach to Shape-from-shading Under Natural Illumination, 

[C19] F. Bernard, F. R. Schmidt, J. Thunberg and D. Cremers, 
A Combinatorial Solution to Non-Rigid 3D Shape-to-Image Matching, 

[C20] Peng, S., Haefner, B., Queau, Y., Cremers and D., 
Depth Super-Resolution Meets Uncalibrated Photometric Stereo, 
International Conference on Computer Vision Workshops (ICCVW), 2017, Oral Presentation at ICCV Workshop on Color and Photometry in Computer Vision.

2016

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[J1] L. Cosmo, E. Rodola, A. Albarelli, F. Memoli and D. Cremers, 
Consistent Partial Matching of Shape Collections via Sparse Modeling, 
Author: Cremers

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Anisotropic Diffusion Descriptors,  

[J3] V. Golkov, A. Dosovitskiy, J. I. Sperl, M. I. Menzel, M. Czisch, P. Sämann, T. Brox and D. Cremers,  
q-Space Deep Learning: Twelve-Fold Shorter and Model-Free Diffusion MRI Scans,  
35: 2016, Special Issue on Deep Learning.

[J4] O. Litany, E. Rodola, A. M. Bronstein, M. M. Bronstein and D. Cremers,  
Non-Rigid Puzzles,  

[J5] Vestner, M., Litman, R., Bronstein, A., Rodola, E., Cremers and D.,  
Bayesian Inference of Bijective Non-Rigid Shape Correspondence,  

Book Chapters

[BC1] Vestner, M., Rodola, E., Windheuser, T., Bulo, Rota Bulo, S., Cremers and D.,  
Applying Random Forests to the Problem of Dense Non-rigid Shape Correspondence,  

Conference and Workshop Papers

[C1] N.Mayer, E.Ilg, P.Haeusser, P.Fischer, D.Cremers, A.Dosovitskiy and T.Brox,  
A Large Dataset to Train Convolutional Networks for Disparity, Optical Flow, and Scene Flow Estimation,  
IEEE International Conference on Computer Vision and Pattern Recognition (CVPR),  
2016.

Model-Free Novelty-Based Diffusion MRI,  
Prague, Czech Republic, April 2016.

[C3] V. Golkov, M. J. Skwark, A. Golkov, A. Dosovitskiy, T. Brox, J. Meiler and D. Cremers,  
Protein Contact Prediction from Amino Acid Co-Evolution Using Convolutional Networks for Graph-Valued Images,  
Barcelona, Spain, December 2016.

[C4] Z. Lähner, E. Rodola, F. R. Schmidt, M. M. Bronstein and D. Cremers,  
Efficient Globally Optimal 2D-to-3D Deformable Shape Matching,  
May 2016.

[C5] A. Narr, R. Triebel and D. Cremers,  
Stream-based Active Learning for Efficient and Adaptive Classification of 3D Objects,  
May 2016.

SHREC16: Matching of Deformable Shapes with Topological Noise,  
May 2016.
Author: Cremers

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2015
Journal Articles


[J6] R. Mecca, E. Rodola and D. Cremers,  
Realistic Photometric Stereo Using Partial Differential Irradiance Equation Ratios,  

[J7] T. Möllenhoff, E. Strekalovskiy, M. Möller and D. Cremers,  
The Primal-Dual Hybrid Gradient Method for Semiconvex Splittings,  

**Book Chapters**

[BC1] V. Golkov, J. M. Portegies, A. Golkov, R. Duits and D. Cremers,  
Holistic Image Reconstruction for Diffusion MRI,  
*Computational Diffusion MRI*, Munich, Germany, Springer, October 2015, Book Chapter, and Oral Presentation at MICCAI 2015 Workshop on Computational Diffusion MRI.

**Conference and Workshop Papers**

[C1] M. Moeller, J. Diebold, G. Gilboa and D. Cremers,  
Learning Nonlinear Spectral Filters for Color Image Reconstruction,  
2015.

[C2] J. Diebold, N. Demmel, C. Hazirbas, M. Möller and D. Cremers,  
Interactive Multi-label Segmentation of RGB-D Images,  
2015.

[C3] C. Hazirbas, J. Diebold and D. Cremers,  
Optimizing the Relevance-Redundancy Tradeoff for Efficient Semantic Segmentation,  
2015.

[C4] T. Möllenhoff, E. Strekalovskiy, M. Möller and D. Cremers,  
Low Rank Priors for Color Image Regularization,  
2015.

[C5] M. Jaimez, M. Souiai, J. Gonzalez-Jimenez and D. Cremers,  
A Primal-Dual Framework for Real-Time Dense RGB-D Scene Flow,  
*Proc. of the IEEE Int. Conf. on Robotics and Automation (ICRA)*, 2015.

[C6] J. Stühmer and D. Cremers,  
A Fast Projection Method for Connectivity Constraints in Image Segmentation,  
X.-C. Tai, E. Bae, T. F. Chan and M. Lysaker(Eds.), , 2015.

[C7] R. Mecca, E. Rodola and D. Cremers,  
Analysis of Surface Parametrizations for Modern Photometric Stereo Modeling,  
*International Conference on Quality Control by Artificial Vision (QCAV)*, 2015.

[C8] F. Bergamasco, A. Albarelli, L. Cosmo, A. Torsello, E. Rodola and D. Cremers,  
Adopting an Unconstrained Ray Model in Light-field Cameras for 3D Shape Reconstruction,  
2015.
[C9] D. Mund, R. Triebel and D. Cremers, 
*Active Online Confidence Boosting for Efficient Object Classification*, 

P. A. Gomez, A. Haase, T. Brox and D. Cremers, 
*q-Space Deep Learning for Twelve-Fold Shorter and Model-Free Diffusion MRI Scans*, 
Munich, Germany, October 2015.

[C11] A. Dosovitskiy, P. Fischer, E. Ilg, P. Haeusser, C. Hazirbas, V. Golkov, P. van der Smagt, 
D. Cremers and T. Brox, 
*FlowNet: Learning Optical Flow with Convolutional Networks*, 
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V. Evers, M. Fiore, H. Hung, O. A. Islas Ramirez, M. Joosse, H. Khambhaita, T. Kucner, 
B. Leibe, A. J. Lilienthal, T. Linder, M. Lohse, M. Magnusson, B. Okal, L. Palmieri, U. Rafi, M. van Rooij and L. Zhang, 
*SPENCER: A Socially Aware Service Robot for Passenger Guidance and Help in Busy Airports*, 

[C13] J. Engel, J. Stueckler and D. Cremers, 
*Large-Scale Direct SLAM with Stereo Cameras*, 
2015.

[C14] D. Caruso, J. Engel and D. Cremers, 
*Large-Scale Direct SLAM for Omnidirectional Cameras*, 
2015.

[C15] Y. Tao, R. Triebel and D. Cremers, 
*Semi-supervised Online Learning for Efficient Classification of Objects in 3D Data Streams*, 
2015.

[C16] R. Maier, J. Stueckler and D. Cremers, 
*Super-Resolution Keyframe Fusion for 3D Modeling with High-Quality Textures*, 

[C17] M. Jaimez, M. Souiai, J. Stueckler, J. Gonzalez-Jimenez and D. Cremers, 
*Motion Cooperation: Smooth Piece-Wise Rigid Scene Flow from RGB-D Images*, 

[C18] E. Rodola, M. Moeller and D. Cremers, 
*Point-wise Map Recovery and Refinement from Functional Correspondence*, 
Aachen, Germany, 2015, *Received the Best Paper Award*.

[C19] C. Kerl, J. Stueckler and D. Cremers, 
*Dense Continuous-Time Tracking and Mapping with Rolling Shutter RGB-D Cameras*, 
Santiago, Chile, 2015.
[C20] M. Souiai, M. R. Oswald, Y. Kee, J. Kim, M. Pollefeys and D. Cremers,
Entropy Minimization for Convex Relaxation Approaches,
Santiago, Chile, 2015.

[C21] F. Stark, C. Hazirbas, R. Triebel and D. Cremers,
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[C22] J. Stühmer, S. Nowozin, A. Fitzgibbon, R. Szeliski, T. Perry, S. Acharya, D. Cremers and J. Shotton,
Model-Based Tracking at 300Hz using Raw Time-of-Flight Observations,
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[J1] B. Goldluecke, M. Aubry, K. Kolev and D. Cremers,
A Super-resolution Framework for High-Accuracy Multiview Reconstruction,

[J2] E. Strekalovskiy, A. Chambolle and D. Cremers,
Convex Relaxation of Vectorial Problems with Coupled Regularization,

[J3] J. Engel, J. Sturm and D. Cremers,
Scale-Aware Navigation of a Low-Cost Quadrocopter with a Monocular Camera,

[J4] E. Rodola, S. Rota Bulo and D. Cremers,
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[B1] D. Cremers, I. Reid, H. Saito and M.-S. Yang (Editors),
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Joint Super-Resolution Using Only One Anisotropic Low-Resolution Image per q-Space Coordinate,
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2014.


[C7] Y. Kee, M. Souiai, D. Cremers and J. Kim, Sequential Convex Relaxation for Mutual-Information-Based Unsupervised Figure-Ground Segmentation, 2014.


[C15] M. R. Oswald and D. Cremers, 
Surface Normal Integration for Convex Space-time Multi-view Reconstruction, 2014.

[C16] C. Nieuwenhuis, S. Hawe, M. Kleinsteuber and D. Cremers, 
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[C19] A. Kanezaki, E. Rodola, D. Cremers and T. Harada, 
[Taiou tenshuugou ruijido gakushuu wo mochiita goutai-higoutai buttai kenshutsu], - Pattern Recognition and Media Understanding (PRMU), Vol. 114, 13-18, October 2014.

[C20] M. Andreux, E. Rodola, M. Aubry and D. Cremers, 
Anisotropic Laplace-Beltrami Operators for Shape Analysis, 
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[C21] O. Dunkley, J. Engel, J. Sturm and D. Cremers, 
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[C22] R. Triebel, J. Stühmer, M. Souiai and D. Cremers, 
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[C23] S. Debnath, S. S. Baishya, R. Triebel, V. Dutt and D. Cremers, 
Environment-adaptive Learning: How Clustering Helps to Obtain Good Training Data, 

[C24] A. Kanezaki, E. Rodola, D. Cremers and T. Harada, 
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Towards Illumination-invariant 3D Reconstruction using ToF RGB-D Cameras, 
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[C27] F. R. Schmidt, T. Windheuser, U. Schlickewei and D. Cremers,  
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[J1] C. Nieuwenhuis and D. Cremers,  
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[J2] C. Nieuwenhuis, E. Toeppe and D. Cremers,  
A Survey and Comparison of Discrete and Continuous Multi-label Optimization Approaches for the Potts Model,  
[J3] B. Goldluecke, E. Strekalovskiy and D. Cremers,  
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[J4] F. Endres, J. Hess, J. Sturm, D. Cremers and W. Burgard,  
3D Mapping with an RGB-D Camera,  
[J5] Liu, Z., Beetz, M., Cremers, D., Gall, J., Li, W., Pangercic, D., Sturm, J., Tai and Y.-W.,  
Introduction to the special issue on visual understanding and applications with RGB-D cameras,  

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Moment Constraints in Convex Optimization for Segmentation and Tracking,  

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[C1] M. Souiai, C. Nieuwenhuis, E. Strekalovskiy and D. Cremers,  
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[C2] J. Bergbauer, C. Nieuwenhuis, M. Souiai and D. Cremers,  
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