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

[J3] J. Schuchardt, V. Golkov and D. Cremers,
Learning to Evolve,

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

[J5] L. von Stumberg, P. Wenzel, Q. Khan and D. Cremers,
GN-Net: The Gauss-Newton Loss for Deep Direct SLAM,

[J6] M. Eisenberger, Z. Lähner and D. Cremers,
Smooth Shells: Multi-Scale Shape Registration with Functional Maps,

[J7] Haefner, B., Peng, S., Verma, A., Queau, Y., Cremers and D.,
Photometric Depth Super-Resolution,

[J8] Q. Khan, P. Wenzel, D. Cremers and L. Leal-Taixe,
Towards Generalizing Sensorimotor Control Across Weather Conditions,

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,

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

[C5] 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.

[C6] M. Moeller, T. Möllenhoff and D. Cremers,
Controlling Neural Networks via Energy Dissipation,
International Conference on Computer Vision (ICCV), Seoul, South Korea, 10 2019.

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[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.


[C6] B. T. Do, V. Golkov, G. E. Gürel and D. Cremers,

[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**,  
*IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018, **Spotlight Presentation**.

### 2017

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[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**,  

**Genetic defects in s-spectrin and tau sensitize C. elegans axons to movement-induced damage via torque-tension coupling**,  

**Tau Like Proteins Reduce Torque Generation in Microtubule Bundles**,  

[J4] J. Kukacka, V. Golkov and D. Cremers,  
**Regularization for Deep Learning: A Taxonomy**,  
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[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.

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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,
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.
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SHREC16: Partial Matching of Deformable Shapes,
May 2016.

[C8] T. Möllenhoff, E. Laude, M. Moeller, J. Lellmann and D. Cremers,
Sublabel-Accurate Relaxation of Nonconvex Energies,
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[C9] L. Ma, C. Kerl, J. Stueckler and D. Cremers,
CPA-SLAM: Consistent Plane-Model Alignment for Direct RGB-D SLAM,
May 2016.

[C10] J. Engel, V. Usenko and D. Cremers,
A Photometrically Calibrated Benchmark For Monocular Visual Odometry,

[C11] J. Engel, V. Koltun and D. Cremers,
Direct Sparse Odometry,

[C12] E. Laude, T. Möllenhoff, M. Moeller, J. Lellmann and D. Cremers,
Sublabel-Accurate Convex Relaxation of Vectorial Multilabel Energies,
October 2016.

[C13] T. Windheuser and D. Cremers,
A Convex Solution to Spatially-Regularized Correspondence Problems,
October 2016.

[C14] S. Sharifzadeh, I. Chiotellis, R. Triebel and D. Cremers,
Learning to Drive using Inverse Reinforcement Learning and Deep Q-Networks,
NIPS Workshops, December 2016.

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[J1] J. Diebold, C. Nieuwenhuis and D. Cremers,
Midrange Geometric Interactions for Semantic Segmentation,
2015.

[J2] J. Diebold, S. Tari and D. Cremers,
The Role of Diffusion in Figure Hunt Games,

[J3] S. Madhogaria, P. M. Baggenstoss, M. Schikora, W. Koch and D. Cremers,
Car detection by fusion of HOG and causal MRF,

[J4] M. Klodt, K. Herzog, R. Töpfer and D. Cremers,
Field phenotyping of grapevine growth using dense stereo reconstruction,

[J5] E. Rodola, A. Albarelli, D. Cremers and A. Torsello,
A Simple and Effective Relevance-based Point Sampling for 3D Shapes,
[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,  

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[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. Möller, 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,  
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*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,  
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[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,
December 2015.

V. Evers, M. Fiore, H. Hung, O. A. Islas Ramirez, M. Joosse, H. Kambhaita, 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,
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[C13] J. Engel, J. Stueckler and D. Cremers,
Large-Scale Direct SLAM with Stereo Cameras,
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[C14] D. Caruso, J. Engel and D. Cremers,
Large-Scale Direct SLAM for Omnidirectional Cameras,
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[C15] Y. Tao, R. Triebel and D. Cremers,
Semi-supervised Online Learning for Efficient Classification of Objects in 3D Data Streams,
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[C16] R. Maier, J. Stueckler and D. Cremers,
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[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,
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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,  
**CAPTCHA Recognition with Active Deep Learning**,  
GCPR Workshop on New Challenges in Neural Computation, Aachen, Germany, 2015.

[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,  
**Robust Region Detection via Consensus Segmentation of Deformable Shapes**,  

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[B1] D. Cremers, I. Reid, H. Saito and M.-S. Yang (Editors),  
**Computer Vision: ACCV 2014**,  
Springer 2014.

Book Chapters   

**Joint Super-Resolution Using Only One Anisotropic Low-Resolution Image per q-Space Coordinate**,  
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Conference and Workshop Papers   

**Direct Reconstruction of the Average Diffusion Propagator with Simultaneous Compressed-Sensing-Accelerated Diffusion Spectrum Imaging and Image Denoising by Means of Total Generalized Variation Regularization**,  
2014.
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Improved Diffusion Kurtosis Imaging and Direct Propagator Estimation Using 
6-D Compressed Sensing, 2014.

[C4] D. Weikersdorfer, D. B. Adrian, D. Cremers and J. Conrad, 
Event-based 3D SLAM with a depth-augmented dynamic vision sensor, 2014.

[C5] F. Steinbruecker, J. Sturm and D. Cremers, 
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[C6] E. Rodola, S. Rota Bulo, T. Windheuser, M. Vestner and D. Cremers, 
Dense Non-Rigid Shape Correspondence Using Random Forests, 2014.

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

[C8] H. Alvarez, L.M. Paz, J. Sturm and D. Cremers, 
Collision Avoidance for Quadrotors with a Monocular Camera, 

[C9] J. Engel, T. Schöps and D. Cremers, 
LSD-SLAM: Large-Scale Direct Monocular SLAM, September 2014, Oral Presentation.

[C10] T. Schöps, J. Engel and D. Cremers, 
Semi-Dense Visual Odometry for AR on a Smartphone, September 2014, Best Short Paper Award.

[C11] T. Windheuser, M. Vestner, E. Rodola, R. Triebel and D. Cremers, 
Optimal Intrinsic Descriptors for Non-Rigid Shape Analysis, 2014.

[C12] M. Strobel, J. Diebold and D. Cremers, 
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[C13] R. Maier, J. Sturm and D. Cremers, 
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[C14] T. Gurdan, M. R. Oswald, D. Gurdan and D. Cremers, 
Spatial and Temporal Interpolation of Multi-View Image Sequences, 
Münster, Germany, Vol. 36, September 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,
Co-Sparse Textural Similarity for Interactive Segmentation, 2014.

[C17] M. R. Oswald, J. Stühmer and D. Cremers,

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[Taiou tenshuugou ruijido gakushuu wo mochiita goutai-higoutai buttai kenshusutsu], - Pattern Recognition and Media Understanding (PRMU), Vol. 114, 13-18, October 2014.

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[C21] O. Dunkley, J. Engel, J. Sturm and D. Cremers,

[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,

[C24] A. Kanezaki, E. Rodola, D. Cremers and T. Harada,

[C25] D. Bender, M. Schikora, J. Sturm and D. Cremers,
INS-Camera Calibration without Ground Control Points, 9th IEEE ISIF Workshop on Sensor Data Fusion: Trends, Solutions, Applications (SDF), 2014.

[C26] C. Kerl, M. Souiai, J. Sturm and D. Cremers,
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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,
Tight Convex Relaxations for Vector-Valued Labeling,

[J4] F. Endres, J. Hess, J. Sturm, D. Cremers and W. Burgard,
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[J5] Liu, Z., Beetz, M., Cremers, D., Gall, J., Li, W., Pangercic, D., Sturm, J., Tai and Y.-W.,
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[BC1] M. Klodt, F. Steinbruecker and D. Cremers,
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[C1] M. Souiai, C. Nieuwenhuis, E. Strekalovskiy and D. Cremers,
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*ICCV Workshop on Graphical Models for Scene Understanding*, 2013.

[C3] V. Golkov, T. Sprenger, A. Menini, M.I. Menzel, D. Cremers and J.I. Sperl,
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[C5] V. Golkov, M.I. Menzel, T. Sprenger, A. Menini, D. Cremers and J.I. Sperl,
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May 2013, Best Vision Paper Award - Finalist.

[C9] E. Toeppe, C. Nieuwenhuis and D. Cremers,
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[C11] E. Bylow, J. Sturm, C. Kerl, F. Kahl and D. Cremers,
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