2021

Journal Articles

[J1] H. Bauermeister, E. Laude, T. Moellenhoff, M. Moeller and D. Cremers,  
Lifting the convex conjugate in Lagrangian relaxations: A Tractable Approach for Continuous Markov Random Fields,  

[J2] P. Müller, V. Golkov, V. Tomassini and D. Cremers,  
Rotation-Equivariant Deep Learning for Diffusion MRI,  

[J3] C Tomani, D Cremers and F Buettner,  
Parameterized Temperature Scaling for Boosting the Expressive Power in Post-Hoc Uncertainty Calibration,  

[J4] J. Chui, S. Klenk and D. Cremers,  
Event-Based Feature Tracking in Continuous Time with Sliding Window Optimization,  

[J5] M. Mozes, M. Schmitt, V. Golkov, H. Schütze and D. Cremers,  
Scene Graph Generation for Better Image Captioning?,  

Conference and Workshop Papers

[C1] B. Haefner, S. Green, A. Oursland, D. Andersen, M. Goesele, D. Cremers, R. Newcombe and T. Whelan,  
Recovering Real-world Reflectance Properties and Shading from HDR Imagery,  

[C2] T Frerix, D Kochkov, J Smith, D Cremers, M Brenner and S Hoyer,  
Variational Data Assimilation with a Learned Inverse Observation Operator,  

[C3] M. Eisenberger, D. Novotny, G. Kerchenbaum, P. Labatut, N. Neverova, D. Cremers and A. Vedaldi,  
NeuroMorph: Unsupervised Shape Interpolation and Correspondence in One Go,  
IEEE International Conference on Computer Vision and Pattern Recognition (CVPR),  
2021.

[C4] M. C. Mukkamala, F. Westerkamp, E. Laude, D. Cremers and P. Ochs,  
Bregman Proximal Gradient Algorithms for Deep Matrix Factorization,  
Elmoataz, Abderrahim, Fadili, Jalal, Quéau, Yvain, Rabin, Julien, Simon and Loïc(Eds.),  


C. Tomani, S. Gruber, M. E. Erdem, D. Cremers and F. Buettner, 
Post-hoc Uncertainty Calibration for Domain Drift Scenarios, 

N. Demmel, D. Schubert, C. Sommer, D. Cremers and V. Usenko, 
Square Root Marginalization for Sliding-Window Bundle Adjustment, 
IEEE International Conference on Computer Vision (ICCV), 2021.

M. W. Wudenka, M. G. Müller, N. Demmel, A. Wedler, R. Triebel, D. Cremers and W. Stuerzl, 
Towards Robust Monocular Visual Odometry for Flying Robots on Planetary Missions, 

S. Klenk, J. Chui, N. Demmel and D. Cremers, 
TUM-VIE: The TUM Stereo Visual-Inertial Event Dataset, 

L. Koestler, N. Yang, N. Zeller and D. Cremers, 
TANDEM: Tracking and Dense Mapping in Real-time using Deep Multi-view Stereo, 
Conference on Robot Learning (CoRL), 2021.

S. Weber, N. Demmel and D. Cremers, 
Multidirectional Conjugate Gradients for Scalable Bundle Adjustment, 
German Conference on Pattern Recognition (GCPR), 2021, Oral Presentation.

2020 Journal Articles

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

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

V. Golkov, A. Becker, D. T. Plop, D. 38;268uturilo, N. Davoudi, J. Mendenhall, R. Moretti, J. Meiler and D. Cremers, 
Deep Learning for Virtual Screening: Five Reasons to Use ROC Cost Functions, 

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

L. von Stumberg, P. Wenzel, Q. Khan and D. Cremers, 
GN-Net: The Gauss-Newton Loss for Multi-Weather Relocalization, 
[J6] C. Sommer, Y. Sun, L. J. Guibas, D. Cremers and T. Birdal, 
From Planes to Corners: Multi-Purpose Primitive Detection in Unorganized 
3D Point Clouds,
*IEEE Robotics and Automation Letters (RA-L)* 38; International Conference on Robotics 

Sijbers and M. Verhoye, 
Accelerating in vivo fast spin echo high angular resolution diffusion imaging 
with an isotropic resolution in mice through compressed sensing,

[J8] G Fabbro, V Golkov, T Kemp and D Cremers, 
Speech Synthesis and Control Using Differentiable DSP, 

[J9] I Chiotellis and D Cremers, 
Neural Online Graph Exploration, 

Conference and Workshop Papers

and D. Cremers, 
3D Deep Learning for Biological Function Prediction from Physical Fields, 

[C2] L. Sang, B. Haefner and D. Cremers, 
Inferring Super-Resolution Depth from a Moving Light-Source Enhanced 
RGB-D Sensor: A Variational Approach,
*IEEE Winter Conference on Applications of Computer Vision (WACV)*, Colorado, USA, 
March 2020, **Spotlight Presentation**.

[C3] T Frerix, M Niesner and D Cremers, 
Homogeneous Linear Inequality Constraints for Neural Network Activations, 
*Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition 

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

[C5] M. Eisenberger, Z. Lähner and D. Cremers, 
Smooth Shells: Multi-Scale Shape Registration with Functional Maps, 
*IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020, **Oral Presentation**.

[C6] M. Eisenberger and D. Cremers, 
Hamiltonian Dynamics for Real-World Shape Interpolation, 
*European Conference on Computer Vision (ECCV)*, 2020, **Spotlight Presentation**.
[C7] M. Eisenberger, A. Toker, L. Leal-Taixe and D. Cremers,  
Deep Shells: Unsupervised Shape Correspondence with Optimal Transport,  

[C8] S. Weiss, R. Maier, D. Cremers, R. Westermann and N. Thuerey,  
Correspondence-Free Material Reconstruction using Sparse Surface Constraints,  

[C9] C. Sommer, V. Usenko, D. Schubert, N. Demmel and D. Cremers,  
Efficient Derivative Computation for Cumulative B-Splines on Lie Groups,  

[C10] N. Yang, L. von Stumberg, R. Wang and D. Cremers,  
D3VO: Deep Depth, Deep Pose and Deep Uncertainty for Monocular Visual Odometry,  

[C11] Z. Ye, T. Möllenhoff, T. Wu and D. Cremers,  
Optimization of Graph Total Variation via Active-Set-based Combinatorial Reconditioning,  
International Conference on Artificial Intelligence and Statistics (AISTATS), 2020.

[C12] J Liu, I Chiotellis, R Triebel and D Cremers,  
Effective Version Space Reduction for Convolutional Neural Networks,  
European Conference on Machine Learning and Data Mining (ECML-PKDD), 2020.

[C13] J. Du, R. Wang and D. Cremers,  
DH3D: Deep Hierarchical 3D Descriptors for Robust Large-Scale 6DoF Relocalization,  
European Conference on Computer Vision (ECCV), 2020, Spotlight Presentation.

[C14] C. Sommer, Y. Sun, E. Bylow and D. Cremers,  
PrimiTect: Fast Continuous Hough Voting for Primitive Detection,  

[C15] L. Koestler, N. Yang, R. Wang and D. Cremers,  
Learning Monocular 3D Vehicle Detection without 3D Bounding Box Labels,  

[C16] P. Wenzel, R. Wang, N. Yang, Q. Cheng, Q. Khan, L. von Stumberg, N. Zeller and D. Cremers,  
4Seasons: A Cross-Season Dataset for Multi-Weather SLAM in Autonomous Driving,  

[C17] B Holzschuh, Z Lähner and D Cremers,  
Simulated Annealing for 3D Shape Correspondence,  
[C18] M Aygün, Z Lähner and D Cremers, 
Unsupervised Dense Shape Correspondence using Heat Kernels, 

[C19] N Demmel, M Gao, E Laude, T Wu and D Cremers, 
Distributed Photometric Bundle Adjustment, 

[C20] L. von Stumberg, P. Wenzel, N. Yang and D. Cremers, 
LM-Reloc: Levenberg-Marquardt Based Direct Visual Relocalization, 

2019

Journal Articles

Video Object Segmentation without Temporal Information, 

[J2] H Tjaden, U Schwanecke, E Schömer and D Cremers, 
A Region-based Gauss-Newton Approach to Real-Time Monocular Multiple Object Tracking, 

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

[J4] F. Pasa, V. Golkov, F. Pfeiffer, D. Cremers and D. Pfeiffer, 
Efficient Deep Network Architectures for Fast Chest X-Ray Tuberculosis Screening and Visualization, 

[J5] J. Schuchardt, V. Golkov and D. Cremers, 
Learning to Evolve, 

[J6] L. Della Libera, V. Golkov, Y. Zhu, A. Mielke and D. Cremers, 
Deep Learning for 2D and 3D Rotatable Data: An Overview of Methods, 

Conference and Workshop Papers

Shape Correspondence with Isometric and Non-Isometric Deformations, 
Silvia Biasotti, Guillaume Lavoué and Remco C. Veltkamp (Eds.), *12th Eurographics Workshop on 3D Object Retrieval, 3DOR@Eurographics 2019*, Genoa, Italy, May 5-6, 2019, Eurographics Association, 111-119, 2019.


**Author: Cremers**

**List of Publications**

[C14] 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,

[C15] 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,

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

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

[J4] B Bringmann, D Cremers and F Krahmer,
The homotopy method revisited: Computing solution paths of L1-regularized problems,

[J5] J. Melou, Y. Queau, J.-D. Durou, F. Castan and D. Cremers,
Variational Reflectance Estimation from Multi-view Images,

[J6] P. Bergmann, R. Wang and D. Cremers,
Online Photometric Calibration of Auto Exposure Video for Realtime Visual Odometry and SLAM,
*IEEE Robotics and Automation Letters (RA-L)*, 3: 627-634, April 2018, **ICRA’18 Best Vision Paper Award - Finalist.**

[J7] E. Aljalbout, V. Golkov, Y. Siddiqui, M. Strobel and D. Cremers,
Clustering with Deep Learning: Taxonomy and New Methods,

[J8] N Mayer, E Ilg, P Fischer, C Hazirbas, D Cremers, A Dosovitskiy and T Brox,
What Makes Good Synthetic Training Data for Learning Disparity and Optical Flow Estimation?,

Omnidirectional DSO: Direct Sparse Odometry with Fisheye Cameras,
[J10] L. Ma, J. Stueckler, T. Wu and D. Cremers,
Detailed Dense Inference with Convolutional Neural Networks via Discrete Wavelet Transform,
Aug 2018.

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[C1] R. Henschel, L. Leal-Taixe, D. Cremers and B. Rosenhahn,
Fusion of Head and Full-Body Detectors for Multi-Object Tracking,

[C2] C. Sommer and D. Cremers,
Joint Representation of Primitive and Non-primitive Objects for 3D Vision,

[C3] C. Hazirbas, S. G. Soyer, M. C. Staab, L. Leal-Taixe and D. Cremers,
Deep Depth From Focus,
Asian Conference on Computer Vision (ACCV), December 2018.

[C4] B. Haefner, Y. Queau, T. Möllenhoff and D. Cremers,
Fight ill-posedness with ill-posedness: Single-shot variational depth super-resolution from shading,

Discrete-Continuous ADMM for Transductive Inference in Higher-Order MRFs,

[C6] C Domokos, F. R. Schmidt and D Cremers,
MRF Optimization with Separable Convex Prior on Partially Ordered Labels,

[C7] 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.

[C8] 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.

[C9] R Scona, M Jaimez, YR. Petillot, M Fallon and D Cremers,
StaticFusion: Background Reconstruction for Dense RGB-D SLAM in Dynamic Environments,
q-Space Novelty Detection in Short Diffusion MRI Scans of Multiple Sclerosis,

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

[C12] B. T. Do, V. Golkov, G. E. Gürel and D. Cremers,
Precursor microRNA Identification Using Deep Convolutional Neural Networks,

[C13] 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.

[C14] T. Frerix, T. Möllenhoff, M. Moeller and D. Cremers,
Proximal Backpropagation,

[C15] L. von Stumberg, V. Usenko and D. Cremers,
Direct Sparse Visual-Inertial Odometry using Dynamic Marginalization,

[C16] D. Schubert, T. Goll, N. Demmel, V. Usenko, J. Stueckler and D. Cremers,
The TUM VI Benchmark for Evaluating Visual-Inertial Odometry,

[C17] X. Gao, R. Wang, N. Demmel and D. Cremers,
LDSO: Direct Sparse Odometry with Loop Closure,

[C18] Z. Lähner, D. Cremers and T. Tung,
DeepWrinkles: Accurate and Realistic Clothing Modeling,

[C19] N. Yang, R. Wang, J. Stueckler and D. Cremers,
Deep Virtual Stereo Odometry: Leveraging Deep Depth Prediction for Monocular Direct Sparse Odometry,

[C20] D. Schubert, N. Demmel, V. Usenko, J. Stueckler and D. Cremers,
Direct Sparse Odometry With Rolling Shutter,
[C21] V. Usenko, N. Demmel and D. Cremers,
The Double Sphere Camera Model,

[C22] I. Chiotellis, F. Zimmermann, D. Cremers and R. Triebel,
Incremental Semi-Supervised Learning from Streams for Object Classification,

[C23] V. Estellers, F. Schmidt and D. Cremers,
Robust Fitting of Subdivision Surfaces for Smooth Shape Analysis,
Proc. of the Int. Conference on 3D Vision (3DV), September 2018, Received the Best Paper Award at 3DV 2018.

[C24] 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.

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[J1] G. Kuschk, P. d’Angelo, D. Gaudrie, P. Reinartz and D. Cremers,
Spatially Regularized Fusion of Multiresolution Digital Surface Models,

[J2] D. Cremers, L. Leal-Taixe and R. Vidal,
Deep Learning for Computer Vision (Dagstuhl Seminar 17391),
Dagstuhl Reports, 7(9): 109-125, 2017.

[J3] Y. Kee, Y. Lee, M. Souiai, D. Cremers and J. Kim,
Sequential Convex Programming for Computing Information-Theoretic Minimal Partitions: Nonconvex Nonsmooth Optimization,

[J4] D Cremers,
Computer Vision für 3-D-Rekonstruktion - Vom Nischenthema zum Mainstream,

[J5] E. Rodola, L. Cosmo, M. M. Bronstein, A. Torsello and D. Cremers,
Partial Functional Correspondence,

[J6] L. Cosmo, E. Rodola, A. Albarelli, F. Memoli and D. Cremers,
Consistent Partial Matching of Shape Collections via Sparse Modeling,

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

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

[J9] E Rodola, M Möller and D Cremers,
**Regularized Pointwise Map Recovery from Functional Correspondence**, 

[J10] J. Kukacka, V. Golkov and D. Cremers,
**Regularization for Deep Learning: A Taxonomy**, 

Conference and Workshop Papers

[C1] M. Benning, M. Möller, R. Z. Nossek, M. Burger, D. Cremers and G. Gilboa,
**Nonlinear Spectral Image Fusion**, 

[C2] D. Bender, W. Koch and D. Cremers,
**Map-based drone homing using shortcuts**, 

[C3] G. Kuschk, A. Bozic and D. Cremers,
**Real-time variational stereo reconstruction with applications to large-scale dense SLAM**, 

[C4] M. Jaimez, C. Kerl, J. Gonzalez-Jimenez and D. Cremers,
**Fast Odometry and Scene Flow from RGB-D Cameras based on Geometric Clustering**, 
*Proc. of the IEEE Int. Conf. on Robotics and Automation (ICRA)*, 2017.

[C5] 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**, 

[C6] L. Ma, J. Stueckler, C. Kerl and D. Cremers,
**Multi-View Deep Learning for Consistent Semantic Mapping with RGB-D Cameras**, 

[C7] M. Vestner, R. Litman, E. Rodola, A. Bronstein and D. Cremers,
**Product Manifold Filter: Non-Rigid Shape Correspondence via Kernel Density Estimation in the Product Space**, 
[C8] M. Dzitsiuk, J. Sturm, R. Maier, L. Ma and D. Cremers,  
De-noising, Stabilizing and Completing 3D Reconstructions On-the-go using Plane Priors,  

[C9] L. von Stumberg, V. Usenko, J. Engel, J. Stueckler and D. Cremers,  
From Monocular SLAM to Autonomous Drone Exploration,  

[C10] F. Walch, C. Hazirbas, L. Leal-Taixe, T. Sattler, S. Hilsenbeck and D. Cremers,  
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[C12] Y. Queau, M. Pizenberg, J.-D. Durou and D. Cremers,  
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[C13] P. Haeusser, A. Mordvintsev and D. Cremers,  
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[C14] M. Slavcheva, M. Baust, D. Cremers and S. Ilic,  
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[C15] 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,  
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[C16] Y. Queau, T. Wu, F. Lauze, J.-D. Durou and D. Cremers,  
A Non-Convex Variational Approach to Photometric Stereo under Inaccurate Lighting,  
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[C17] T. Meinhardt, M. Moeller, C. Hazirbas and D. Cremers,  
Learning Proximal Operators: Using Denoising Networks for Regularizing Inverse Imaging Problems,  

One-Shot Video Object Segmentation,  
*IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Honolulu, USA, 2017.
[C19] Y. Queau, J. Melou, J.-D. Durou and D. Cremers,
Dense Multi-view 3D-reconstruction Without Dense Correspondences,

[C20] P. Haeusser, T. Frerix, A. Mordvintsev and D. Cremers,
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[C21] Y. Queau, M. Pizenberg, D. Cremers and J.-D. Durou,
Stereophotometrie microscopique sans demosaiquage,
GRETSI, Juan-les-Pins, USA, 2017.

Efficient Deformable Shape Correspondence via Kernel Matching,
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[C23] R. Maier, R. Schaller and D. Cremers,
Efficient Online Surface Correction for Real-time Large-Scale 3D Reconstruction,
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[C24] J. Geiping, H. Dirks and D. Cremers,
Multiframe Motion Coupling for Video Super Resolution,

[C25] 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,
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[C26] S. Peng, B. Haefner, Y. Queau and D. Cremers,
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[C27] R. Wang, M. Schwörer and D. Cremers,
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[C28] T. Möllenhoff and D. Cremers,
Sublabel-Accurate Discretization of Nonconvex Free-Discontinuity Problems,
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[C29] Y. Queau, J. Melou, F. Castan, D. Cremers and J.-D. Durou,
A Variational Approach to Shape-from-shading Under Natural Illumination,
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[J1] J. Diebold, C. Nieuwenhuis and D. Cremers,
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[J2] J. Duran, M. Möller, C. Sbert and D. Cremers,
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[J3] M. Burger, G. Gilboa, M. Möller, L. Eckardt and D. Cremers,
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[J5] V. Golkov, A. Dosovitskiy, J. I. Sperl, M. I. Menzel, M. Czisch, P. Sämann, T. Brox and
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[J7] M. Vestner, R. Litman, A. Bronstein, E. Rodola and D. Cremers,
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Book Chapters

[BC1] M. Vestner, E. Rodola, T. Windheuser, RBS. Bulo and D. Cremers,
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[C1] L. Cosmo, A. Albarelli, F. Bergamasco, A. Torsello, E. Rodola and D. Cremers,
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[C14] E. Laude, T. Möllenhoff, M. Moeller, J. Lellmann and D. Cremers, 
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[C16] I. Chiotellis, R. Triebel, T. Windheuser and D. Cremers, 
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A Convex Solution to Spatially-Regularized Correspondence Problems, 
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Learning to Drive using Inverse Reinforcement Learning and Deep Q-Networks, 
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[C19] D. Bender, F. Rouatbi, M. Schikora, D. Cremers and W. Koch, 
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[J1] J. Diebold, S. Tari and D. Cremers, 
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[J3] M. Klodt, K. Herzog, R. Töpfer and D. Cremers, 
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[J4] E. Rodola, A. Albarelli, D. Cremers and A. Torsello, 
A Simple and Effective Relevance-based Point Sampling for 3D Shapes, 

[J5] R. Mecca, E. Rodola and D. Cremers, 
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[J6] T. Möllenhoff, E. Strekalovskiy, M. Möller and D. Cremers,
The Primal-Dual Hybrid Gradient Method for Semiconvex Splittings,

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Entropy Minimization for Groupwise Planar Shape Co-alignment and its Applications,

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[BC1] D. Cremers,
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