2022

Journal Articles

[J1] C Tomani and D Cremers,  
**Challenger: Training with Attribution Maps**,  

[J2] L. von Stumberg and D. Cremers,  
**DM-VIO: Delayed Marginalization Visual-Inertial Odometry**,  

**Deep Learning in Attosecond Metrology**,  
*Optics Express*, 30(9): 15669-15684, 2022, *Editor’s Pick*.

[J4] T Yenamandra, A Tewari, N Yang, F Bernard, C Theobalt and D Cremers,  
**HDSDF: Hybrid Directional and Signed Distance Functions for Fast Inverse Rendering**,  
2022.

Conference and Workshop Papers

[C1] M. Eisenberger, A. Toker, L. Leal-Taixe, F. Bernard and D. Cremers,  
**A Unified Framework for Implicit Sinkhorn Differentiation**,  
*IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

[C2] C Tomani, D Cremers and F Buettner,  
**Parameterized Temperature Scaling for Boosting the Expressive Power in Post-Hoc Uncertainty Calibration**,  
*European Conference on Computer Vision (ECCV)*, 2022.

[C3] J. Veraart and 100 coauthors,  
**A data-driven variability assessment of brain diffusion MRI preprocessing pipelines**,  

[C4] C Sommer, L Sang, D Schubert and D Cremers,  
**Gradient-SDF: A Semi-Implicit Surface Representation for 3D Reconstruction**,  
*IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

[C5] Z Ye, T Yenamandra, F Bernard and D Cremers,  
**Joint Deep Multi-Graph Matching and 3D Geometry Learning from Inhomogeneous 2D Image Collections**,  
*AAAI*, 2022.

[C6] D Muhle, L Koestler, N Demmel, F Bernard and D Cremers,  
**The Probabilistic Normal Epipolar Constraint for Frame-To-Frame Rotation Optimization under Uncertain Feature Positions**,  
*IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
Author: Cremers—coauthors

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[C7] S Weber, N Demmel, T Chon Chan and D Cremers,
**Power Bundle Adjustment for Large-Scale 3D Reconstruction, submission**, 2022.

[C8] F Müller, Q Khan and D Cremers,

[C9] L Hang, Q Khan, V Tresp and D Cremers,
**Biologically Inspired Neural Path Finding**, *Brain Informatics (Accepted)*, Springer, 2022.

[C10] D Das, Q Khan and D Cremers,

[C11] L Koestler, D Grittner, M Moeller, D Cremers and Z Lähner,

[C12] M Gladkova, N Korobov, N Demmel, A Osep, L Leal-Taixe and D Cremers,

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Journal Articles

[J1] H. Bauermeister, E. Laude, T. Moellenhoff, M. Moeller and D. Cremers,

[J2] P. Müller, V. Golkov, V. Tomassini and D. Cremers,

[J3] J. Chui, S. Klenk and D. Cremers,

[J4] M. Mozes, M. Schmitt, V. Golkov, H. Schütze and D. Cremers,

Conference and Workshop Papers

[C1] B. Haefner, S. Green, A. Oursland, D. Andersen, M. Goesele, D. Cremers, R. Newcombe and T. Whelan,


[C13] Y. Xia, Y. Xu, S. Li, R. Wang, J. Du, D. Cremers and U. Stilla, 
SOE-Net: A Self-Attention and Orientation Encoding Network for Point Cloud 
based Place Recognition, 
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021, Oral Pre-
sentation.

[C14] P. Wenzel, T. Schön, L. Leal-Taixe and D. Cremers, 
Vision-Based Mobile Robotics Obstacle Avoidance With Deep Reinforcement 
Learning, 
Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), 
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[C15] N Demmel, C Sommer, D Cremers and V Usenko, 
Square Root Bundle Adjustment for Large-Scale Reconstruction, 

[C16] C Tomani, S Gruber, ME Erdem, D Cremers and F Buettner, 
Post-hoc Uncertainty Calibration for Domain Drift Scenarios, 
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021, Oral Pre-
sentation.

[C17] N Demmel, D Schubert, C Sommer, D Cremers and V Usenko, 
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[C18] MW Wudenka, MG Müller, N Demmel, A Wedler, R Triebel, D Cremers and W Stuerzl, 
Towards Robust Monocular Visual Odometry forFlying Robots on Planetary 
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[C19] S Klenk, J Chui, N Demmel and D Cremers, 
TUM-VIE: The TUM Stereo Visual-Inertial Event Dataset, 

[C20] 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, 3DV’21 Best Demo Award.

[C21] S Weber, N Demmel and D Cremers, 
Multidirectional Conjugate Gradients for Scalable Bundle Adjustment, 
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[J1] E. Laude, P. Ochs and D. Cremers, 
Bregman Proximal Mappings and Bregman-Moreau Envelopes under Relative 
Prox-Regularity, 

[J2] B. Haefner, S. Peng, A. Verma, Y. Queau and D. Cremers, 
Photometric Depth Super-Resolution, 
Author: Cremers—coauthors

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[J3] 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,

Visual-Inertial Mapping with Non-Linear Factor Recovery,

[J5] 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,

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

[C1] 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,

[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,
[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, 
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[C6] M. Eisenberger and D. Cremers, 
Hamiltonian Dynamics for Real-World Shape Interpolation, 
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[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, 
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[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, 


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[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,

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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.

[C2] B. Haefner, Y. Queau and D. Cremers,
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International Conference on 3D Vision (3DV), Quebec City, Canada, September 2019, Spotlight Presentation.

[C3] B. Haefner, Z. Ye, M. Gao, T. Wu, Y. Queau and D. Cremers,
Variational Uncalibrated Photometric Stereo under General Lighting,
International Conference on Computer Vision (ICCV), Seoul, South Korea, October 2019.

[C4] 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,
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[C5] P. Swazinna, V. Golkov, I. Lipp, E. Sgarlata, V. Tomassini, D. K. Jones and D. Cremers,
Negative-Unlabeled Learning for Diffusion MRI,

[C6] D. Schubert, N. Demmel, L. von Stumberg, V. Usenko and D. Cremers,
Rolling-Shutter Modelling for Visual-Inertial Odometry,

[C7] M. Eisenberger, Z. Lähner and D. Cremers,
Divergence-Free Shape Correspondence by Deformation,

[C8] E. Laude, T. Wu and D. Cremers,
Optimization of Inf-Convolution Regularized Nonconvex Composite Problems,
International Conference on Artificial Intelligence and Statistics (AISTATS), 2019.

[C9] T. Möllenhoff and D. Cremers,
Lifting Vectorial Variational Problems: A Natural Formulation based on Geometric Measure Theory and Discrete Exterior Calculus,
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019, Oral Presentation.
Author: Cremers—coauthors  

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[C10] T. Möllenhoff and D. Cremers,  
Flat Metric Minimization with Applications in Generative Modeling,  

[C11] Q. Khan, P. Wenzel, D. Cremers and L. Leal-Taixe,  
Towards Generalizing Sensorimotor Control Across Weather Conditions,  

[C12] M. Moeller, T. Möllenhoff and D. Cremers,  
Controlling Neural Networks via Energy Dissipation,  
*International Conference on Computer Vision (ICCV)*, Seoul, South Korea, 10 2019.

[C13] E. Jung, N. Yang and D. Cremers,  
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*Conference on Robot Learning (CoRL)*, 2019, Full Oral Presentation.

[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,  

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[J1] J. Engel, V. Koltun and D. Cremers,  
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[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,  
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The homotopy method revisited: Computing solution paths of L1-regularized problems,  

[J5] J. Melou, Y. Queau, J.-D. Durou, F. Castan and D. Cremers,  
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[J6] P. Bergmann, R. Wang and D. Cremers,
Online Photometric Calibration of Auto Exposure Video for Realtime Visual Odometry and SLAM,

[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.

**Conference and Workshop Papers**

[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,
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[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,
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Discrete-Continuous ADMM for Transductive Inference in Higher-Order MRFs,
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[C6] C Domokos, FR. Schmidt and D Cremers, 
MRF Optimization with Separable Convex Prior on Partially Ordered Labels, 
Vittorio Ferrari, Martial Hebert, Cristian Sminchisescu and Yair Weiss(Eds.), Computer 
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[C7] E. Laude, T. Wu and D. Cremers, 
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[C8] T. Möllenhoff, Z. Ye, T. Wu and D. Cremers, 
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[C9] R Scona, M Jaimez, YR. Petillot, M Fallon and D Cremers, 
StaticFusion: Background Reconstruction for Dense RGB-D SLAM in Dynamic 
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[C10] V. Golkov, A. Vasilev, F. Pasa, I. Lipp, W. Boubaker, E. Sgarlata, F. Pfeiffer, V. Tomassini, 
D. K. Jones and D. Cremers, 
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Weakly-Supervised Localization, 
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[C12] B. T. Do, V. Golkov, G. E. Gürel and D. Cremers, 
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[C13] P. Haeusser, J. Plapp, V. Golkov, E. Aljalbout and D. Cremers, 
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[C14] T. Frerix, T. Möllenhoff, M. Moeller and D. Cremers, 
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[C15] L. von Stumberg, V. Usenko and D. Cremers, 
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[C16] D. Schubert, T. Goll, N. Demmel, V. Usenko, J. Stueckler and D. Cremers,
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[C17] X. Gao, R. Wang, N. Demmel and D. Cremers,
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[C18] Z. Lähner, D. Cremers and T. Tung,
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[C19] N. Yang, R. Wang, J. Stueckler and D. Cremers,
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[C20] D. Schubert, N. Demmel, V. Usenko, J. Stueckler and D. Cremers,
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[C21] V. Usenko, N. Demmel and D. Cremers,
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[C22] I. Chiotellis, F. Zimmermann, D. Cremers and R. Triebel,
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[C23] V. Estellers, F. Schmidt and D. Cremers,
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[C24] P. Wenzel, Q. Khan, D. Cremers and L. Leal-Taixe,
**Modular Vehicle Control for Transferring Semantic Information Between Weather Conditions Using GANs,**
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[J1] G. Kuschk, P. d’Angelo, D. Gaudrie, P. Reinartz and D. Cremers,
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[J2] D. Cremers, L. Leal-Taixe and R. Vidal,
**Deep Learning for Computer Vision (Dagstuhl Seminar 17391),**
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[J3] Y. Kee, Y. Lee, M. Souiai, D. Cremers and J. Kim, 
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[J4] D Cremers, 
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[J5] E. Rodola, L. Cosmo, M. M. Bronstein, A. Torsello and D. Cremers, 
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[J6] L. Cosmo, E. Rodola, A. Albarelli, F. Memoli and D. Cremers, 
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Regularization for Deep Learning: A Taxonomy, 

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[C1] M. Benning, M. Möller, R. Z. Nossek, M. Burger, D. Cremers and G. Gilboa, 
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[C2] D. Bender, W. Koch and D. Cremers, 
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[C3] G. Kuschk, A. Bozic and D. Cremers, 
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[C4] M. Jaimez, C. Kerl, J. Gonzalez-Jimenez and D. Cremers,
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[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,
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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,
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[C25] R. Maier, K. Kim, D. Cremers, J. Kautz and M. Niessner,
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[C29] Y. Queau, J. Melou, F. Castan, D. Cremers and J.-D. Durou,
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[J1] J. Diebold, C. Nieuwenhuis and D. Cremers,
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[J2] S. Madhogaria, P. M. Baggenstoss, M. Schikora, W. Koch and D. Cremers,
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[J4] E. Rodola, A. Albarelli, D. Cremers and A. Torsello,
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