NOTE: THIS PUBLICATION LIST IS NO LONGER UPDATED, PLEASE VISIT MPL WEBPAGE FOR AN UPDATED LIST OF PUBLICATIONS.

I published most of my work at top international conferences in robotics and computer vision such as the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), the International Conference on Computer Vision (ICCV), the European Conference on Computer Vision (ECCV), or the International Conference on Robotics and Automation (ICRA). Due to acceptance rates as low as 25%, publications at top computer vision conferences are considered an outstanding achievement comparable to publications in top journals in the field.

## Peer-reviewed journal publications

- J Zhao, **L Kneip**, Y He, and J Ma. Minimal case relative pose computation using ray-point-ray features. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 42:1176–1190, 2020
- Y Zhou, H Li, and **L Kneip**. Canny-VO: Visual Odometry with RGB-D Cameras based on Geometric 3D-2D Edge Alignment. *IEEE Transactions on Robotics (T-RO)*, 35(1):1–16, 2019
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- D Scaramuzza, M C Achtelik, L Doitsidis, F Fraundorfer, E B Kosmatopoulos, A Martinelli, M W Achtelik, M Chli, S A Chatzichristofis, **L Kneip**, D Gurdan, L Heng, G H Lee, S Lynen, L Meier, M Pollefeys, A Renzaglia, R Siegwart, J C Stumpf, P Tanskanen, C Troiani, and S Weiss. Vision-controlled micro flying robots: from system design to autonomous navigation and mapping in GPS-denied environments. *IEEE Robotics and Automation Magazine*, 21(3):26–40, 2014
- S Weiss, M W Achtelik, S Lynen, M C Achtelik, **L Kneip**, M Chli, and R Siegwart. Monocular vision for long-term micro aerial vehicle state estimation: A compendium. *Journal of Field Robotics (JFR)*, 30(5):803–831, 2013
- S Weiss, M Achtelik, **L Kneip**, D Scaramuzza, and R Siegwart. Intuitive 3d maps for mav terrain exploration and obstacle avoidance. *Journal of Intelligent Robotics Systems*, 61(1–4):473–493, 2011
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- W Xu, H Lan, M C Tsakiris, and **L Kneip**. Online stability improvement of gröbner basis solvers using deep learning. In *Proceedings of the International Conference on 3D Vision (3DV)*, Quebec City, Canada, September 2019. Oral Presentation
- K Huang, Y Wang, and **L Kneip**. Motion estimation of non-holonomic ground vehicles from a single feature correspondence measured over n views. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Long Beach, USA, June 2019
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- L Peng, X Song, M C Tsakiris, H Choi, **L Kneip**, and Y Shi. Algebraically-initialized expectation maximization for header-free communication. In *Proceedings of the IEEE International Conference on Accoustics, Speech and Signal Processing (ICASSP)*, Brighton, UK, May 2019a

### 2018

- L Hu, Y Cao, P Wu, and **L Kneip**. Dense object reconstruction from rgbd images with embedded deep shape representations. In *Asian Conference on Computer Vision (ACCV), Workshop on RGB-D - sensing and understanding via combined colour and depth*, Perth, Australia, December 2018a
- Y Zhou, G Gallego, H Rebecq, **L Kneip**, H Li, and D Scaramuzza. Semi-dense 3d reconstruction with a stereo event camera. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Munich, Germany, September 2018a

- J Briales, **L Kneip**, and J Gonzalez-Jimenez. A Certifiably Globally Optimal Solution to the Non-Minimal Relative Pose Problem. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, June 2018. Oral presentation
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- M Ramezani, K Koshelham, and **L Kneip**. Omnidirectional Visual-Inertial Odometry Using Multi-State Constraint Kalman Filter. In *Proceedings of the IEEE/RSJ Conference on Intelligent Robots and Systems (IROS)*, Vancover, Canada, September 2017
- Y Wang and **L Kneip**. On scale initialization in non-overlapping multi-perspective visual odometry. In *Proceedings of the International Conference on Computer Vision Systems*, Shenzhen, July 2017a. Best Student Paper Award
- Z Wang and **L Kneip**. Towards Space Carving with a Hand-held Camera. In *Proceedings of the International Conference on Computer Vision Systems*, Shenzhen, July 2017b
- Y Zhou, **L Kneip**, and H Li. Semi-dense Visual Odometry for RGB-D Cameras using Approximate Nearest Neighbour Fields. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Singapore, May 2017a

## 2016

- G Long, **L Kneip**, J M Alvarez, H Li, X Zhang, and Q Yu. Learning Image Matching by Simply Watching Video. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Amsterdam, Netherlands, October 2016b. Oral presentation
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- **L Kneip** and P Furgale. OpenGV: A unified and generalized approach to calibrated geometric vision. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, China, May 2014

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- L Oth, P T Furgale, **L Kneip**, and R Siegwart. Rolling shutter camera calibration. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Portland, USA, June 2013
- **L Kneip**, P Furgale, and R Siegwart. Using multi-camera systems in robotics: efficient solutions to the NPnP problem. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Karlsruhe, Germany, May 2013. Best computer vision paper finalist

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- A Breitenmoser, **L Kneip**, and R Siegwart. A monocular vision-based system for 6D relative robot localization. In *Proceedings of the IEEE/RSJ Conference on Intelligent Robots and Systems (IROS)*, San Francisco, USA, September 2011
- R Voigt, J Nikolic, C Hürzeler, S Weiss, **L Kneip**, and R Siegwart. Robust embedded egomotion estimation. In *Proceedings of the IEEE/RSJ Conference on Intelligent Robots and Systems (IROS)*, San Francisco, USA, September 2011
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- **L Kneip**, A Martinelli, S Weiss, D Scaramuzza, and R Siegwart. Closed-form solution for absolute scale velocity determination combining inertial measurements and a single feature correspondence. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Shanghai, China, May 2011b

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- F Bourgeois, **L Kneip**, S Weiss, and R Siegwart. Delay and dropout tolerant state estimation for MAVs. In O Khatib, V Kumar, and G Sukhatme, editors, *Experimental Robotics*, volume 79 of *Springer Tracts in Advanced Robotics*, pages 571–584. Springer, 2014

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- D Campbell, L Petersson, **L Kneip**, H Li, and S Gould. The alignment of the spheres: Globally-optimal spherical mixture alignment for camera pose estimation. *ArXiv e-prints*, 2018
- Z Wang and **L Kneip**. Fully automatic structure from motion with a spline-based environment representation. *ArXiv e-prints*, 2018
- M C Tsakiris, L Peng, A Conca, **L Kneip**, Y Shi, and H Choi. An algebraic-geometric approach to shuffled linear regression. *ArXiv e-prints*, 2018
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- C Baumann and **L Kneip**. Stereo-Hör-Sensor. *Elektor Magazine*, page 14, 2007

## Thesis

- **L Kneip**. *Real-Time Scalable Structure from Motion: From Fundamental Geometric Vision to Collaborative Mapping*. PhD thesis, ETH Zurich, 2012. ETH Dissertation No. 20628