



Information and Communication Technologies

Collaborative Project

“V-Charge”

Autonomous Valet Parking and Charging for e-Mobility

Grant Agreement Number 269916



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Deliverable Name	V-Charge technical publications
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EXECUTIVE SUMMARY:

One of the main aim of WP7 is the dissemination of the results obtained in work packages 1-6. This deliverable lists the technical publication that have been published on scientific journals or presented in conferences or workshops.

Technical publications

In the following the publications are listed into the different year projects according to publication or submission date

First year

1. Laurent Kneip, Paul Timothy Furgale, Roland Siegwart, *Using Multi-Camera Systems in Robotics: Efficient Solutions to the NPNP Problem*, 2013 IEEE International Conference on Robotics and Automation (ICRA)
2. Julian Timpner and Lars Wolf, *Efficient Charging Station Scheduling for an Autonomous Parking and Charging System*, 2012 9th ACM international workshop on Vehicular inter-networking, systems, and applications
3. Julian Timpner and Lars Wolf, *A Back-end System for an Autonomous Parking and Charging System for Electric Vehicle*, 2012 Electric Vehicle Conference (IEVC)
4. Christian Haene, Christopher Zach, Bernhard Zeisl, and Marc Pollefeys, *A Patch Prior for Dense 3D Reconstruction in Man-Made Environments*, 2012 2nd International Conference on 3D Imaging, Modeling, Processing, Visualization & Transmission

Second year

5. Ulrich Schwesinger, Martin Ruffli, Paul Furgale, and Roland Siegwart, *A Sampling-Based Partial Motion Planning Framework for System-Compliant Navigation along a Reference Path*, IEEE Intelligent Vehicles Symposium (IVS) 2013
6. Jérôme Maye, Paul Furgale, and Roland Siegwart, *Self-supervised Calibration for Robotic Systems*, IEEE Intelligent Vehicles Symposium (IVS) 2013
7. Luc Oth, Paul Furgale, Laurent Kneip, Roland Siegwart, *Rolling Shutter Camera Calibration*, 2013 IEEE Conference on Computer Vision and Pattern Recognition
8. Paul Furgale et al., *Toward Automated Driving in Cities using Close-to-Market Sensors, an Overview of the V-Charge Project*, IEEE Intelligent Vehicles Symposium (IVS) 2013
9. Christian Haene, Christopher Zach, Andrea Cohen, Roland Angst, and Marc Pollefeys, *Joint 3D Scene Reconstruction and Class Segmentation*, 2013 IEEE Conference on Computer Vision and Pattern Recognition
10. Gim Hee Lee, Friedrich Fraundorfer, and Marc Pollefeys, *Motion Estimation for a Self-Driving Car with a Generalized Camera*, 2013 IEEE Conference on Computer Vision and Pattern Recognition
11. Rudolph Triebel, Hugo Grimmett, and Ingmar Posner, *Confidence Boosting: Improving the Introspectiveness of a Boosted Classifier for Efficient Learning*, 2013 IEEE International Conference on Robotics and Automation (ICRA)
12. Hugo Grimmett, Rohan Paul, Rudolph Triebel, and Ingmar Posner, *Knowing When We Don't Know: Introspective Classification for Mission-Critical Decision Making*, 2013 IEEE International Conference on Robotics and Automation (ICRA)
13. Lionel Heng, Bo Li, Marc Pollefeys, *CamOdoCal: Automatic Intrinsic and Extrinsic Calibration of a Rig with Multiple Generic Cameras and Odometry*, IROS 2013.

14. Gim Hee Lee, Friedrich Fraundorfer, and Marc Pollefeys, *Structureless pose-graph loop-closure with a multi-camera system on a self-driving car*, IROS 2013.
15. Gim Hee Lee, Friedrich Fraundorfer, and Marc Pollefeys, *Robust pose-graph loop-closures with Expectation-Maximization*, IROS 2013.
16. Bo Li, Lionel Heng, Gim Hee Lee, and Marc Pollefeys, *A 4-point Algorithm for Relative Pose Estimation of a Calibrated Camera with a Known Relative Rotation Angle*, IROS 2013.
17. Bo Li, Lionel Heng, Kevin Koeser, and Marc Pollefeys, *A Multiple-Camera System Calibration Toolbox Using A Feature Descriptor-Based Calibration Pattern*, IROS 2013.
18. Rudolph Triebel, Hugo Grimmert, Rohan Paul, and Ingmar Posner, *Introspective Active Learning for Scalable Semantic Mapping*, Workshop. Robotics Science and Systems (RSS) 2013
19. J. Timpner, D. Schürmann, and L. Wolf, *Secure Smartphone-based Registration and Key Deployment for Vehicle-to-Infrastructure Communications*, Workshop on Security, Privacy and Dependability for CyberVehicles. New York, NY, USA: ACM, 2013

Third year

20. Gim Hee Lee, Marc Pollefeys, and Friedrich Fraundorfer, *Relative Pose Estimation for a Multi-Camera System with Known Vertical Direction*, 2014 IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)
21. Christian Haene, Nikolay Savinov, and Marc Pollefeys, *Class Specific 3D Object Shape Priors Using Surface Normals*, 2014 IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)
22. Gim Hee Lee, and Marc Pollefeys, *Unsupervised Learning of Threshold for Geometric Verification in Visual-Based Loop-Closure*, 2014 IEEE International Conference on Robotics and Automation (ICRA)
23. Lionel Heng, Mathias Buerki, Gim Hee Lee, Paul Furgale, Roland Siegwart, and Marc Pollefeys, *Infrastructure-Based Calibration of a Multi-Camera Rig*, 2014 IEEE International Conference on Robotics and Automation (ICRA)
24. Gim Hee Lee, Bo Li, Marc Pollefeys, and Friedrich Fraundorfer, *Minimal Solutions for Pose Estimation of a Multi-Camera System*, International Symposium on Robotics Research (ISRR) 2013
25. Julian Timpner and Lars C. Wolf, *Design and Evaluation of Charging Station Scheduling Strategies for Electric Vehicles*, IEEE Transactions on Intelligent Transportation Systems (Journal), April 2014
26. Tobias Pögel, Julian Timpner, Stephan Rottmann and Lars C. Wolf, *Estimation of Vehicular Connectivity in Autonomous Parking Scenarios*, PIK - Praxis der Informationsverarbeitung und Kommunikation (Journal), December 2013
27. Julian Timpner, Domink Schürmann, and Lars Wolf, *Secure Smartphone-based Registration and Key Deployment for Vehicle-to-Cloud Communications*, ACM Workshop on Security, Privacy and Dependability for Cyber Vehicles (CyCAR '13)
28. Peter Muehlfellner, Paul Furgale, Wojciech Derendarz, Roland Philippsen, *Evaluation of Fisheye-Camera Based Visual Multi-Session Localization in a Real-World Scenario*, IEEE Intelligent Vehicles Symposium (IVS) 2013

29. Martin Rufli, Javier Alonso-Mora, Roland Siegwart, Reciprocal Collision Avoidance With Motion Continuity Constraints, IEEE Transactions on Robotics (T-RO), August 2013
30. Stefan Leutenegger, Paul Furgale, Vincent Rabaud, Margarita Chli, Kurt Konolige and Roland Siegwart, Keyframe-Based Visual-Inertial SLAM using Nonlinear Optimization, Robotics Science and Systems 2013
31. Bo Li, Lionel Heng, Kevin Koeser, and Marc Pollefeys, A Multiple-Camera System Calibration Toolbox Using a Feature Descriptor-Based Calibration Pattern, 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems
32. Bo Li, Lionel Heng, Gim Hee Lee, and Marc Pollefeys, A 4-Point Algorithm for Relative Pose Estimation of a Calibrated Camera with a Known Relative Rotation Angle, 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems
33. Lionel Heng, Bo Li, and Marc Pollefeys, CamOdoCal: Automatic Intrinsic and Extrinsic Calibration of a Rig with Multiple Generic Cameras and Odometry, 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems
34. Gim Hee Lee, Friedrich Fraundorfer, and Marc Pollefeys, Robust Pose-Graph Loop-Closures with Expectation-Maximization, 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems
35. Gim Hee Lee, Friedrich Fraundorfer, Marc Pollefeys, Structureless Pose-Graph Loop-Closure with a Multi-Camera System on a Self-Driving Car, 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems
36. Rudolph Triebel, Hugo Grimmitt, Rohan Paul, Ingmar Posner, Introspective Active Learning for Scalable Semantic Mapping, Workshop. Robotics Science and Systems (RSS)

Fourth year

37. Massimo Bertozzi, Luca Castangia, Stefano Cattani, Antonio Prioletti, and Pietro Versari, *360° detection and tracking algorithm of both pedestrian and vehicle using fisheye images*, IEEE Intelligent Vehicles Symposium 2015 (IV2015)
38. Julian Timpner, Stephan Rottmann, and Lars Wolf, *Vehicular Communications in the V-Charge Project*, 2nd GI/ITG KuVS Fachgespräch Inter-Vehicle Communication (FG-IVC 2014)
39. Stephan Rottmann, Julian Timpner, and Lars Wolf, *Demo: Automated Valet Parking and Charging*, IEEE Vehicular Networking Conference (VNC) 2014
40. Julian Timpner, Mario Wozenilek, and Lars Wolf, *Breadcrumb Routing: Query-Response Geocast for Mobile Originators in Vehicular Networks*, IEEE Vehicular Networking Conference (VNC) 2014
41. Philipp Krüsi, Bastian Bücheler, Francois Pomerleau, Ulrich Schwesinger, Roland Siegwart, and Paul Furgale, *Lighting-Invariant Adaptive Route Following Using ICP*, Journal of Field Robotics, 2014
42. P. Furgale, P. Krüsi, F. Pomerleau, U. Schwesinger, F. Colas, and R. Siegwart, *There and Back Again*, IEEE International Conference on Intelligent Robots and Systems (ICRA), 2014
43. Alberto Broggi, Elena Cardarelli, Stefano Cattani, Paolo Medici, and Mario Sabbatelli, *Vehicle detection for autonomous parking using a Soft-Cascade AdaBoost classifier*, IEEE Intelligent Vehicles Symposium 2014

44. Paul Furgale, Joern Rehder and Roland Siegwart, *Unified Temporal and Spatial Calibration for Multi-Sensor Systems*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
45. T. Sattler, C. Sweeney, M. Pollefeys, *On Sampling Focal Length Values to Solve the Absolute Pose Problem*, European Conference on Computer Vision (ECCV) 2014
46. C. Häne, L. Heng, G. H. Lee, A. Sizov, M. Pollefeys, *Real-Time Direct Dense Matching on Fisheye Images Using Plane-Sweeping Stereo*, Proc Int. Conf. on 3D Vision (3DV) 2014
47. Laurent Kneip and Paul Timothy Furgale, *OpenGV: A Unified and Generalized Approach to Real-Time Calibrated Geometric Vision*, IEEE International Conference on Robotics and Automation (ICRA) 2014
48. Barfoot and Furgale, *Associating Uncertainty with Three-Dimensional Poses for use in Estimation Problems*, Robotics, IEEE Transactions on, 30(3), pp. 679-693
49. Ulrich Schwesinger, Pietro Versari, Alberto Broggi, Roland Siegwart, *Vision-Only Fully Automated Driving in Dynamic Mixed-Traffic Scenarios*, Journal of Information Technology: "Information Technology, Special Issue Autonomous Driving" (accepted for publication 2015)
50. U. Schwesinger, R. Siegwart and P. Furgale, *Fast collision detection through bounding volume hierarchies in workspace-time space for sampling-based motion planners*, IEEE International Conference on Intelligent Robots and Systems (ICRA), 2015
51. Lionel Heng, Paul Furgale, and Marc Pollefeys, *Leveraging Image-Based Localization for Infrastructure-Based Calibration of a Multi-Camera Rig*, Journal of Field Robotics (JFR), 2015
52. GH Lee, B Li, M Pollefeys, F Fraundorfer, *Minimal solutions for the multi-camera pose estimation problem*, The International Journal of Robotics Research 2015
53. C. Häne, L. Ladicky, M. Pollefeys, *Direction Matters: Depth Estimation with a Surface Normal Classifier*, Proc. IEEE Int. Conf. on Computer Vision and Pattern Recognition (CVPR) 2015
54. R. Karimi, C. Häne, M. Pollefeys, *Segment Based 3D Object Shape Priors*, Proc. IEEE Int. Conf. on Computer Vision and Pattern Recognition (CVPR) 2015
55. Timpner, Julian and Friedrichs, Stephan and van Balen, Johannes and Wolf, Lars, *k-Stacks: High-Density Valet Parking for Automated Vehicles*, Proceedings of the IEEE Intelligent Vehicles Symposium (IV)
56. Timpner, Julian and Schürmann, Dominik and Wolf, Lars, *Trustworthy Parking Communities: Helping your Neighbor to Find a Space*, IEEE Transactions on Dependable and Secure Computing
57. H. Grimmitt, R. Triebel, R. Paul, and I. Posner, *Introspective Classification for Robot Perception*, International Journal of Robotics Research (IJRR). Accepted.
58. H. Grimmitt, M. Buerki, L. Paz, P. Piniés, P. Furgale, I. Posner, and P. Newman, *Integrating Metric and Semantic Maps for Vision-Only Automated Parking*, in Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Seattle, WA, USA, 2015.
59. Christian Häne, Torsten Sattler and Marc Pollefeys, *Obstacle Detection for Self-Driving Cars Using Only Monocular Cameras And Wheel Odometry*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2015 Accepted.
60. J. Timpner and L. Wolf, *Query-Response Geocast for Vehicular Crowd Sensing*, Ad Hoc Networks, no. Special Issue on Vehicular Crowd Sensing, 2015.