Christoph Sprunk

Curriculum Vitae

Georges-Koehler-Allee 79
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Germany
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Fields of Interest

Accurate navigation for mobile robots, range sensing, long-term autonomy

Education

since 2009 **PhD student**, Autonomous Intelligent Systems, Prof. W. Burgard, University of Freiburg

2003 – 2009 **Diploma in Computer Science (MSc)**, University of Freiburg, Germany
Grade: 1.0 (excellent)
Specialization: artificial intelligence and robotics, minor: psychology
Diploma thesis *Kinodynamic Motion Planning for a Holonomic Robot* in cooperation with KUKA Roboter GmbH, Augsburg, Germany

Academic Activities

2015 **euRobotics Technology Transfer Award 2015**, Wolfram Burgard, Patrick Pfaff and Christoph Sprunk, *Flexible Autonomous Navigation for Industrial Shop Floor Applications*

2012 **Invited talk, High Precision Navigation**, Urban Robotics Lab, KAIST, Daejeon, South Korea

2011 **Session chair, Autonomous Navigation I**, ICRA 2011, Shanghai, China

2011 **Selected for Machine Learning Summer School 2011** Bordeaux, France

2010 **Selected for BRICS Research Camp on Mobile Manipulation** Malaga, Spain

Professional Experience

Proficient in C++, Matlab, shell scripting

since 2009 **Researcher**, Autonomous Intelligent Systems, Prof. W. Burgard, University of Freiburg

2015 **Intern, self-driving car project**, Google Inc., Mountain View, CA, USA
Perception, detection and classification of objects in 3D laser data

2007 – 2008 **Teaching assistant**, Autonomous Intelligent Systems, University of Freiburg
Simulation of traffic situations with the Unreal engine

2007 **Intern, Real-Time Vision and Modeling**, Siemens Corporate Research, Princeton, USA
Video-based recognition of US traffic signs

2005 – 2007 **Teaching assistant**, Computer Architecture, University of Freiburg
Tutor Computer Engineering

2003, 2005 **Software engineer**, Herz-Zentrum, Bad Krozingen, Germany (cardiology clinic)
Development of medical database applications (PROGRESS)

Patents

Patrick Pfaff and Christoph Sprunk. **Method for operating an autonomous industrial truck**, 2013. US Patent 20,130,060,415, EP Patent 2,550,227.

Publications

Mladen Mazuran, Christoph Sprunk, Wolfram Burgard, and Gian Diego Tipaldi. **LexTOR: Lexicographic Teach Optimize and Repeat Based on User Preferences**. In Proc. of the IEEE International Conference on Robotics and Automation (ICRA), 2015.

Christoph Sprunk, Joerg Roewekaemper, Gershon Parent, Luciano Spinello, Gian Diego Tipaldi, Wolfram Burgard, and Mihai Jalobeanu. **An Experimental Protocol for Benchmarking Robotic Indoor Navigation**. In Proc. of the International Symposium on Experimental Robotics (ISER), 2014.

Markus Kuderer, Christoph Sprunk, Henrik Kretzschmar, and Wolfram Burgard. **Online Generation of Homotopically Distinct Navigation Paths**. In Proc. of the IEEE International Conference on Robotics and Automation (ICRA), 2014.

Felix Endres, Christoph Sprunk, Rainer Kuemmerle, and Wolfram Burgard. **A Catadioptric Extension for RGB-D Cameras**. In Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2014.

Christoph Sprunk, Gian Diego Tipaldi, Andrea Cherubini, and Wolfram Burgard. **Lidar-based Teach-and-Repeat of Mobile Robot Trajectories**. In Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), 2013.

Boris Lau, Christoph Sprunk, and Wolfram Burgard. **Efficient Grid-based Spatial Representations for Robot Navigation in Dynamic Environments**. Robotics and Autonomous Systems, 61(10):1116–1130, 2013.

Marija Dakulovic, Christoph Sprunk, Luciano Spinello, Ivan Petrovic, and Wolfram Burgard. **Efficient Navigation for Anyshape Holonomic Mobile Robots in Dynamic Environments**. In Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), 2013.

Christoph Sprunk, Boris Lau, and Wolfram Burgard. **Improved Non-linear Spline Fitting for Teaching Trajectories to Mobile Robots**. In Proc. of the IEEE International Conference on Robotics and Automation (ICRA), 2012.

Joerg Roewekaemper, Christoph Sprunk, Gian Diego Tipaldi, Cyrill Stachniss, Patrick Pfaff, and Wolfram Burgard. **On the Position Accuracy of Mobile Robot Localization based on Particle Filters Combined with Scan Matching**. In Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2012.

Markus Kuderer, Henrik Kretzschmar, Christoph Sprunk, and Wolfram Burgard. **Feature-Based Prediction of Trajectories for Socially Compliant Navigation**. In Proc. of Robotics: Science and Systems (RSS), 2012.

Christoph Sprunk, Boris Lau, Patrick Pfaff, and Wolfram Burgard. **Online Generation of Kinodynamic Trajectories for Non-Circular Omnidirectional Robots**. In Proc. of the IEEE International Conference on Robotics and Automation (ICRA), 2011.

Boris Lau, Christoph Sprunk, and Wolfram Burgard. **Incremental Updates of Configuration Space Representations for Non-Circular Mobile Robots with 2D, 2.5D, or 3D Obstacle Models**. In Proc. of the European Conference on Mobile Robots (ECMR), 2011.

Boris Lau, Christoph Sprunk, and Wolfram Burgard. **Improved Updating of Euclidean Distance Maps and Voronoi Diagrams**. In Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2010.

Boris Lau, Christoph Sprunk, and Wolfram Burgard. **Kinodynamic Motion Planning for Mobile Robots Using Splines**. In Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2009.

Christoph Gustav Keller, Christoph Sprunk, Claus Bahlmann, Jan Giebel, and Gregory Baratoff. **Real-Time Recognition of U.S. Speed Signs**. In Proc. of the IEEE Intelligent Vehicles Symposium (IV), 2008. Award winner "Best Student Paper".