

# Curriculum Vitae

Cyrill Stachniss

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## Areas of Interest

Probabilistic methods in robotics, learning techniques for autonomous systems, perception and state estimation, sensor fusion, mobile robot navigation, multi-robot coordination

## Education

- Habilitation and *venia legendi* in computer science 11/2009  
University of Freiburg, Germany  
Habilitation thesis: *Spatial Modeling and Robot Navigation*
- Dr. rer. nat. (Ph.D.) in computer science—*summa cum laude (with distinction)* 04/2006  
University of Freiburg, Germany  
Ph.D. thesis: *Exploration and Mapping with Mobile Robots*  
1<sup>st</sup> Reviewer: Prof. Dr. Wolfram Burgard, University of Freiburg  
2<sup>nd</sup> Reviewer: Prof. Dr. Dieter Fox, University of Washington, WA
- Diplom (M.Sc.) in computer science—*summa cum laude (with distinction)* 08/2002  
University of Freiburg, Germany  
Diploma thesis: *Goal-directed Obstacle Avoidance for Mobile Robots in Dynamic Environments*
- Vordiplom in computer science 03/2000  
University of Marburg, Germany
- Vordiplom in physics 11/1999  
University of Marburg, Germany

## Academic Positions

- University lecturer (Privatdozent und Akademischer Rat) since 10/2010  
University of Freiburg, Department of Computer Science
- Full professor (temporary) at the Autonomous Intelligent Systems Lab 10/2009-09/2010  
during the sabbatical of Prof. Dr. Wolfram Burgard (W3-Lehrstuhlvertretung)  
University of Freiburg, Department of Computer Science
- Guest lecturer spring 2009  
University of Zaragoza (Spain), Dipartimento Informática e Ingeniería de Sistemas
- Akademischer Rat 10/2007-09/2009  
University of Freiburg, Department of Computer Science
- Postdoc 11/2006-09/2007  
University of Freiburg, Department of Computer Science, Lab for Autonomous Intelligent Systems headed by Prof. Dr. Wolfram Burgard
- Senior researcher 05/2006-10/2006  
Eidgenössische Technische Hochschule (ETH) Zurich, Department of Mechanical and Process Engineering, Autonomous Systems Lab headed by Prof. Dr. Roland Siegwart
- Ph.D. student and research associate 12/2002-04/2006  
University of Freiburg, Department of Computer Science, Lab for Autonomous Intelligent Systems headed by Prof. Dr. Wolfram Burgard

## Citation Index

h-index: 24 (determined using “Google Scholar” on February 28)

## Honors and Awards

- Microsoft Research Faculty Fellow 2010
- Nominated for the IEEE RAS Academic Early Career Award 2010
- EURON Georges Giralt Award 2008  
for *the best robotics thesis in Europe* defended in 2006
- Wolfgang-Gentner Award 2006  
for the Ph.D. thesis *Exploration and Mapping with Mobile Robots*
- ICRA 2005—Finalist best student paper 2005  
for the work *Supervised Learning of Places from Range Data using AdaBoost*
- ICASE-IROS 2004 best paper award on application 2005  
for the work *Grid-based FastSLAM and Exploration with Active Loop Closing*
- Förderpreis des Vereins Deutscher Ingenieure (VDI) 2003  
for the Master’s thesis *Goal-directed Obstacle Avoidance for Mobile Robots in Dynamic Environments*

## Funded Projects

- Principal investigator in the 3<sup>rd</sup> phase of the SFB/TR-8 “Spatial Cognition” Project A3-MultiBot, funded by the German Research Foundation (DFG). 2011-2014
- Principal investigator of the EU project TAPAS 2010-2014  
TAPAS—Robotics-enabled Logistics and Assistive Services for the Transformable Factory of the Future. Funded by the European Commission.
- Principal investigator and scientific project manager of the EU project First-MM 2010-2014  
First-MM—Flexible Skill Acquisition and Intuitive Robot Tasking for Mobile Manipulation in the Real World. Funded by the European Commission. The AIS lab is coordinating this project and I was the main author of this proposal.
- Principal investigator and scientific project manager of the EU project EUROPA 2009-2012  
EUROPA—European Robotic Pedestrian Assistant. Funded by the European Commission.  
The proposal has been evaluated as the best among all STREP and IP proposals in the April 2008 FP7-ICT-call on robotics and cognitive systems. The AIS lab is coordinating this project and I was the main author of this proposal.
- Principal investigator in a project on service robotics in industrial applications 2008-2010  
Funded by the MT Robotik AG.
- Principal investigator in the 2<sup>nd</sup> phase of the SFB/TR-8 “Spatial Cognition” Project A3-MultiBot, funded by the German Research Foundation (DFG). 2007-2010
- Principal investigator in the EU project RAWSEEDS 2007-2009  
RAWSEEDS—Robotics Advancements through Web-publishing of Sensorial and Elaborated Extensive Data Sets. Funded by the European Commission.
- Principal investigator in a project on navigation and service robotics 2007-2009  
Funded by Toyota Europe.
- EU project BACS 2006-2009  
BACS—Bayesian Approach to Cognitive Systems. Integrated project, funded by the European Commission. Employed on this project and the responsible coordinating researcher at ETH Zurich. Not involved in the acquisition of the project.
- Principal investigator in a project on robust simultaneous localization and mapping 2006  
Funded by Toyota Europe. Involved in the acquisition and realization of this project.
- BMBF project DESIRE 2006-2009  
DESIRE—Deutsche Service Robotik Initiative. Funded by the Federal Ministry of Education and Research (BMBF). Involved in the acquisition of this project.
- EU project CoSy 2004-2008  
CoSy—Cognitive Systems for Cognitive Assistants. Integrated project, funded by the European Commission. Involved in research in the context of this project, not involved in the acquisition.
- SFB/TR-8 “Spatial Cognition”, 1<sup>st</sup> phase 2003-2006  
Project A3-MultiBot, funded by German Research Foundation (DFG). Involved in the acquisition of this project and employed as a researcher.
- EU project WebFAIR 2001-2003  
WebFAIR—Web Access to Commercial Fairs Through Mobile Agents. Funded by the European Commission. Partially employed as a researcher. Not involved in the acquisition of this project.

## Consulting for Industry

- Numovis Inc., Menlo Park, CA, USA 2010-2011
- Kuka Robotics, Augsburg, Germany since 2008
- MT Robotik AG, Zwingen, Switzerland 2008-2010

## Invited Presentations

- University of Stuttgart, Germany 11/2011  
*Probabilistische Methoden für Autonome Roboter – von grundlegenden Problemen zu realen Systemen*
- University of Amsterdam, The Netherlands 10/2011  
*Probabilistic Techniques for Intelligent, Robust, and Autonomous Robots*
- DGR-Tage 2011, Karlsruhe, Germany 10/2011  
*Autonomous Intelligent Systems*
- Georgia Tech, Atlanta, GA 09/2011  
*Probabilistic Techniques for Autonomous Intelligent Robots*
- Int. Symposium on Robotics Research (ISRR), Flagstaff, AZ 08/2011  
*Pose Graph Compression for Laser-based SLAM*
- University of Stuttgart, Germany 05/2011  
*Probabilistische Techniken für intelligente, robuste und autonome Roboter*
- Università La Sapienza, Rome, Italy 03/2011  
*Articulation Models for Mobile Manipulation Tasks*
- PAIL Seminar, Stanford University, Palo Alto, CA 10/2010  
*Modeling Articulated Objects for Mobile Manipulation*
- Microsoft Research, Redmond, WA 04/2010  
*Probabilistic Robotics*
- USC Distinguished Lecture Day of Robotics, University of Southern California (USC), Los Angeles, CA 03/2010  
*Hierarchical Optimization on Manifolds*
- Technical University of Munich, Germany 04/2009  
*Probabilistic Approaches for Cognitive Robots*
- University of Oxford, UK 03/2009  
*Learning Kinematic Models for Articulated Objects*
- Kolloq. Mathematik und Informatik, Philipps University, Marburg, Germany 09/2008  
*Building Maps with Mobile Robots*
- Kolloq. Mechatronik und Intelligente Sensorik, University of Bielefeld, Germany 02/2008  
*Extracting Semantic Information About the Environment from Sensor Data Using Machine Learning Techniques*
- Invited Tutorial at ECMR 2007, Freiburg, Germany 09/2007  
*Mapping with Rao-Blackwellized Particle Filters*
- RSS Workshop on Sensor Networks, Atlanta, GA 06/2007  
*Cooperative Multi-Robot Exploration*

- German-American Frontiers of Engineering, Hamburg, Germany 04/2007  
*Probabilistic Techniques for Robot Navigation*
- Fraunhofer IPA, Stuttgart, Germany 10/2006  
*Vision-Based Localization for Mobile Robots*
- University of Southern California (USC), Los Angeles, CA 04/2006  
*Improving Robot Navigation by Using Semantic Place Information*
- Massachusetts Institute of Technology (MIT), Boston, MA 04/2006  
*Information Gain-based Exploration for Mobile Robots Using Rao-Blackwellized Particle Filters*
- IROS 2005 Advanced Tutorial on SLAM, Edmonton, Canada 08/2005  
*Rao-Blackwellized Particle Filters and Loop Closing*
- Università La Sapienza, Rome, Italy 06/2005  
*Mapping and Exploration Using Rao-Blackwellized Particle Filters*
- Carnegie Mellon University (CMU), Pittsburgh, PA 07/2002  
*Goal-Directed Obstacle Avoidance in Dynamic Environments Under Dynamic Constraints*

## Teaching Activities

- Instructor for *Introduction to Mobile Robotics* Summer 2012  
Lecture, 4 h/week, shared teaching
- Instructor for *Einführung in die Informatik* (Introduction to CS) Summer 2012  
Lecture, shared teaching
- Instructor for *Advanced Techniques for Mobile Robotics/Robotics II* Winter 2011/12  
Lecture, 4 h/week, approx. 20 students, shared teaching
- Instructor for *Introduction to Mobile Robotics* Summer 2011  
Lecture, 4 h/week, approx. 35 students, shared teaching
- Instructor for *Einführung in die Informatik* (Introduction to CS) Summer 2011  
Lecture, 4 h/week, approx. 140 students, shared teaching
- Instructor for *Probabilistic Graphical Models* Summer 2011  
Seminar, 2 h/week, 10 students, shared teaching
- Instructor for *Simultaneous Localization and Mapping* Winter 2010/11  
Practical Course, 4 h/week, 13 students
- Instructor for *Advanced Techniques for Mobile Robotics/Mobile Robotics II* Winter 2010/11  
Lecture, 4 h/week, shared teaching
- Instructor for *Introduction to Mobile Robotics* Summer 2010  
Lecture, 4 h/week, approx. 16 students, shared teaching (main instructor)
- Instructor for *Einführung in die Informatik für Mikrosystemtechniker* Summer 2010  
Lecture, 4 h/week, approx. 100 students
- Instructor for *Humanoid Robots* Summer 2010  
Seminar, 2 h/week, 10 students, shared teaching
- Instructor for *Advanced Techniques for Mobile Robotics/Mobile Robotics II* Winter 2009/10  
Lecture, 4 h/week, 18 students, shared teaching (main instructor)

- Instructor for *Robot Navigation* Winter 2009/10  
Seminar, 2 h/week, 10 students, shared teaching
- Guest lecturer for a Ph.D. course on *Simultaneous Localization and Mapping* at the University of Zaragoza, Spain Summer 2009
- Instructor for *Introduction to Mobile Robotics* Summer 2009  
Lecture, 4 h/week, approx. 35 students, shared teaching
- Instructor for *Einführung in die Informatik für Mikrosystemtechniker* Summer 2009  
Lecture, 4 h/week, approx. 100 students, shared teaching (main instructor)
- Instructor for *Autonomous Slotcar Racing* Winter 2009/08  
Practical Course, 4 h/week, 8 students
- Instructor for *Introduction to Mobile Robotics* Summer 2008  
Lecture, 4 h/week, approx. 35 students, shared teaching
- Instructor for *Einführung in die Informatik für Mikrosystemtechniker* Summer 2008  
Lecture, 4 h/week, approx. 85 students, shared teaching
- Instructor for *Location-based Services* Winter 2007/08  
Practical Course, 4 h/week, 12 students
- Instructor for *Motion Planning* Winter 2007/08  
Seminar, 2 h/week, 12 students, shared teaching
- Instructor for *Introduction to Mobile Robotics* Summer 2007  
Lecture, 4 h/week, approx. 40 students, shared teaching
- Instructor for *Einführung in die Informatik für Mikrosystemtechniker* Summer 2007  
Lecture, 4 h/week, approx. 70 students, shared teaching
- Co-Instructor for *Informatik I* Winter 2006/07  
Lecture, 6 h/week, teaching in case Prof. Dr. Burgard was unavailable
- Co-Instructor for *Autonomous Mobile Systems* Winter 2005/06  
Seminar, 2 h/week, 14 students, shared teaching
- Co-Instructor for *Informatik I* Winter 2005/06  
Lecture, 6 h/week, teaching in case Prof. Dr. Burgard was unavailable
- Co-Instructor for *Autonomous Mobile Systems* Summer 2005  
Seminar, 2 h/week, 12 students, shared teaching
- Co-Instructor for *Introduction to Mobile Robotics* Summer 2005  
Lecture, 4 h/week, approx. 25 students, teaching in case Prof. Dr. Burgard was unavailable
- Instructor for *The Robot Photographer* Winter 2004/05  
Practical Course, 4 h/week, 12 students
- Co-Instructor for *Theorie und Praxis Autonomer Systeme* Winter 2003/04  
Seminar, 2 h/week, 12 students, shared teaching
- Teaching assistant for *Autonomous Mobile Systems* Summer 2003  
Lecture, 4 h/week, approx. 20 students, shared teaching

## External Ph.D. Committee Memberships

- University of Sydney, Australia 2011
- Polytechnic University of Catalonia, Barcelona, Spain 2011
- University of Zaragoza, Spain 2008

## Services for Journals

- Associate Editor
  - IEEE Transactions on Robotics (T-RO) since 2008
- Guest Editor
  - Journal of Field Robotics for the special issue on Visual Mapping and Navigation Outdoors 2009/2010
- Reviewing
  - IEEE Transactions on Robotics (T-RO) since 2004
  - Autonomous Robots (AuRo) 2004-2008,2010,2011
  - Int. Journal on Robotics Research (IJRR) 2006, 2008, 2009, 2011
  - Robots and Autonomous Systems (RAS) since 2005
  - Journal of Field Robotics (JFR) 2007-2010
  - RSJ Advanced Robotics 2005, 2010
  - Ad Hoc Networks 2011
  - IEEE Sensors Journal 2010
  - IEEE Transactions on Systems, Man, and Cybernetics 2010
  - Journal of Artificial Intelligence Research (JAIR) 2008
  - Annals of Mathematics and Artificial Intelligence (AMAI) 2007
  - Int. Journal of Pattern Recognition and Artificial Intelligence (IJPRAI) 2007

## Conference Services

- Program Chair
  - Spatial Cognition (SC) 2012
- Area Chair
  - Robotics: Science and Systems (RSS) 2010, 2012
- Associate Editor
  - IEEE Int. Conf. on Robotics & Automation (ICRA) since 2009
  - IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS) 2011, 2012
- Workshop Chair
  - Robotics: Science and Systems (RSS) 2011
- Publicity Chair
  - Spatial Cognition (SC) 2012
  - Robotics: Science and Systems (RSS) 2007

- Publication Chair
  - Robotics: Science and Systems (RSS) 2007
- Local Arrangement
  - IEEE Int. Conf. on Advanced Intelligent Mechatronics (AIM) 2007
- Conference Management System
  - Robotics: Science and Systems (RSS) 2006
  - IEEE Int. Conf. on Advanced Intelligent Mechatronics (AIM) 2007
- Program Committee
  - Robotics: Science and Systems (RSS) since 2005
  - Europ. Conf. on Artificial Intelligence (ECAI) 2012
  - National Conf. on Artificial Intelligence (AAAI) 2006
  - Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS) 2008
  - Int. Conf. on Advanced Robotics (ICAR) 2007, 2009
  - Int. Conf. on Intelligent Autonomous Systems (IAS) 2012
  - European Conf. on Mobile Robots (ECMR) since 2007 (biannual)
  - German Conf. on Artificial Intelligence (KI) 2011
  - Int. Conf. on Robot Communication and Coordination (ROBOCOMM) 2007
  - Int. Conf. on Informatics in Control, Automation, and Robotics (ICINCO) 2008
  - ACM Symp. on Applied Computing, Embedded Systems and Robotics track 2008
  - ACM Symp. on Applied Computing, Intelligent Robotics Systems track 2009
- Poster Program Committee
  - IEEE Int. Conf. on Robotics & Automation (ICRA) 2006
- Reviewing
  - Int. Joint Conf. on Artificial Intelligence (IJCAI) 2003, 2005, 2007
  - National Conf. on Artificial Intelligence (AAAI) 2005, 2006
  - Robotics: Science and Systems (RSS) since 2005
  - IEEE Int. Conf. on Robotics & Automation (ICRA) since 2003
  - IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS) since 2002
  - Int. Conf. on Field and Service Robotics (FSR) 2007
  - IEEE Conf. on Local Computer Networks (LCN) 2006
  - Int. Conf. on Automation and Robotics (ICAR) 2005, 2007
  - Int. Conf. on Intelligent Autonomous Systems (IAS) 2008
  - European Conf. on Mobile Robots (ECMR) since 2003 (biannual)
  - Int. Conf. on Social Robotics (ICSR) since 2011
  - Mexican Int. Conf. on Artificial Intelligence (MICAI) 2005
  - Intelligent Autonomous Vehicles (IAV) 2004, 2007
  - Spatial Cognition (SC) 2004, 2006, 2008
  - Robotik 2004, 2006

## Services for Scientific Publishers

- Reviewing for the Springer STAR series 2010

## Workshop/Symposia Services

- Organizer
  - ICRA Workshop on Visual Mapping and Navigation in Outdoor Environments 2009
- Program Committee
  - Int. Workshop on the Algorithmic Foundations of Robotics (WAFR) 2012
  - Starting Artificial Intelligence Research Symposium (STAIRS) 2012
  - ICCV Workshop on Challenges and Opportunities in Robot Perception 2011
  - ICRA Workshop on Intelligent Transportation Systems 2010
  - ICRA Workshop on Visual Mapping and Navigation in Outdoor Environments 2009
  - ICRA Workshop on Safe Navigation in Open and Dynamic Environments –Application to Autonomous Vehicles 2009
  - RSS Workshop Inside Data Association 2008
  - IROS Workshop on Planning, Perception and Navigation for Intelligent Vehicles 2008

## Software Project Involvements

- HOG-Man—Hierarchical Optimization for Pose Graphs on Manifolds since 2009  
Developer of the open source mapping software HOG-Man, which performs hierarchical optimization on manifolds to estimate accurate models of large-scale 3D environments.
- OpenSLAM.org since 2007  
Initiator and developer of the web-based platform OpenSLAM for sharing SLAM algorithms.
- TORO—Tree-based Network Optimizer 2007-2010  
Developer of the open source software TORO, which is an efficient approach to learn environment maps that are encoded as constraint networks and it is designed to deal with bad initial configurations.
- SmartTer—Smart All Terrain Vehicle 2006  
Joint software project between ETH Zurich, EPFL, and the University of Freiburg for building an instrumented car for mapping and autonomous navigation. Participation in the European Land Rover Trials in 2006. I was coordinating the developments in Freiburg.
- GMapping 2004-2008  
Developer of the open source mapping software GMapping, which employs a Rao-Blackwellized particle filter for solving the simultaneous localization and mapping problem in 2D.
- CARMEN 2003-2010  
Developer of the open source robot control software CARMEN—Carnegie Mellon Robot Navigation Toolkit.

# Publication List

Cyrill Stachniss

## Journal/Magazine Articles

- [1] C. Stachniss and H. Kretzschmar. Information-theoretic pose graph compression for laser-based SLAM. *The Int. Journal of Robotics Research (IJRR)*. Under review.
- [2] K.M. Wurm, C. Dornhege, C. Stachniss, B. Nebel, and W. Burgard. Coordinating heterogeneous teams of robots using temporal symbolic planning. *Autonomous Robots*. Under review.
- [3] K.M. Wurm, H. Kretzschmar, R. Kümmerle, C. Stachniss, and W. Burgard. Identifying vegetation from laser data in structured outdoor environments. *Robots and Autonomous Systems*. Accepted with minor revisions.
- [4] J. Sturm, C. Stachniss, and W. Burgard. A probabilistic framework for learning kinematic models of articulated objects. *Journal on Artificial Intelligence Research (JAIR)*, 41:477–526, 2011.
- [5] G. Grisetti, R. Kümmerle, C. Stachniss, and W. Burgard. A tutorial on graph-based SLAM. *IEEE Transactions on Intelligent Transportation Systems Magazine*, 2:31–43, 2010.
- [6] C. Plagemann, C. Stachniss, J. Hess, F. Endres, and N. Franklin. A nonparametric learning approach to range sensing from omnidirectional vision. *Robots and Autonomous Systems*, 58:762–772, 2010.
- [7] H. Kretzschmar, G. Grisetti, and C. Stachniss. Lifelong map learning for graph-based SLAM in static environments. *KI – Künstliche Intelligenz (German AI Magazine)*, 24:199–206, 2010.
- [8] G. Grisetti, C. Stachniss, and W. Burgard. Non-linear constraint network optimization for efficient map learning. *IEEE Transactions on Intelligent Transportation Systems*, 10(3):428–439, 2009.
- [9] R. Kümmerle, B. Steder, C. Dornhege, M. Ruhnke, G. Grisetti, C. Stachniss, and A. Kleiner. On measuring the accuracy of SLAM algorithms. *Autonomous Robots*, 27:387ff, 2009.
- [10] C. Stachniss, C. Plagemann, and A.J. Lilienthal. Gas distribution modeling using sparse gaussian process mixtures. *Autonomous Robots*, 26:187ff, 2009.
- [11] K.M. Wurm, C. Stachniss, and G. Grisetti. Bridging the gap between feature- and grid-based SLAM. *Robots and Autonomous Systems*, 2009.
- [12] C. Stachniss, O. Martínez Mozos, and W. Burgard. Efficient exploration of unknown indoor environments using a team of mobile robots. *Annals of Mathematics and Artificial Intelligence*, 52:205ff, 2009.
- [13] B. Steder, G. Grisetti, C. Stachniss, and W. Burgard. Visual SLAM for flying vehicles. *IEEE Transactions on Robotics*, 24(8):1088–1093, 2008.
- [14] C. Stachniss, G. Grisetti, O. Martínez-Mozos, and W. Burgard. Efficiently learning metric and topological maps with autonomous service robots. *it – Information Technology*, 49(4):232–238, 2007.
- [15] G. Grisetti, G.D. Tipaldi, C. Stachniss, W. Burgard, and D. Nardi. Fast and accurate SLAM with rao-blackwellized particle filters. *Robots and Autonomous Systems*, 55(1):30–38, 2007.

- [16] G. Grisetti, C. Stachniss, and W. Burgard. Improved techniques for grid mapping with rao-blackwellized particle filters. *IEEE Transactions on Robotics*, 23(1):34–46, 2007.
- [17] D. Sonntag, S. Stachniss-Carp, C. Stachniss, and V. Stachniss. Determination of root canal curvatures before and after canal preparation (part II): A method based on numeric calculus. *Aust Endod J*, 32:16–25, 2006.
- [18] C. Stachniss, D. Hähnel, W. Burgard, and G. Grisetti. On actively closing loops in grid-based FastSLAM. *Advanced Robotics*, 19(10):1059–1080, 2005.
- [19] W. Burgard, M. Moors, C. Stachniss, and F. Schneider. Coordinated multi-robot exploration. *IEEE Transactions on Robotics*, 21(3):376–378, 2005.
- [20] P. Trahanias, W. Burgard, A. Argyros, D. Hähnel, H. Baltzakis, P. Pfaff, and C. Stachniss. TOURBOT and WebFAIR: Web-operated mobile robots for tele-presence in populated exhibitions. *IEEE Robotics & Automation Magazine*, 12(2):77–89, 2005.

## Conference Articles

- [1] H. Kretzschmar, C. Stachniss, and G. Grisetti. Efficient information-theoretic graph pruning for graph-based SLAM with laser range finders. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, San Francisco, CA, USA, 2011.
- [2] K.M. Wurm, D. Hennes, D. Holz, R.B. Rusu, C. Stachniss, K. Konolige, and W. Burgard. Hierarchies of octrees for efficient 3d mapping. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, San Francisco, CA, USA, 2011.
- [3] J. Ziegler, H. Kretzschmar, C. Stachniss, G. Grisetti, and W. Burgard. Accurate human motion capture in large areas by combining imu- and laser-based people tracking. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, San Francisco, CA, USA, 2011.
- [4] B. Frank, C. Stachniss, N. Abdo, and W. Burgard. Efficient motion planning for manipulation robots in environments with deformable objects. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, San Francisco, CA, USA, 2011.
- [5] D. Maier, M. Bennewitz, and C. Stachniss. Self-supervised obstacle detection for humanoid navigation using monocular vision and sparse laser data. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Shanghai, China, 2011.
- [6] K.M. Wurm, C. Dornhege, P. Eyerich, C. Stachniss, B. Nebel, and W. Burgard. Coordinated exploration with marsupial teams of robots using temporal symbolic planning. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, 2010.
- [7] J. Sturm, A. Jain, C. Stachniss, C.C. Kemp, and W. Burgard. Robustly operating articulated objects based on experience. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, 2010.
- [8] B. Frank, R. Schmedding, C. Stachniss, M. Teschner, and W. Burgard. Learning the elasticity parameters of deformable objects with a manipulation robot. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, 2010.
- [9] G. Grisetti, R. Kümmerle, C. Stachniss, U. Frese, and C. Hertzberg. Hierarchical optimization on manifolds for online 2d and 3d mapping. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Anchorage, Alaska, 2010.

- [10] M. Karg, K.M. Wurm, C. Stachniss, K. Dietmayer, and W. Burgard. Consistent mapping of multistory buildings by introducing global constraints to graph-based SLAM. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Anchorage, Alaska, 2010.
- [11] J. Sturm, K. Konolige, C. Stachniss, and W. Burgard. Vision-based detection for learning articulation models of cabinet doors and drawers in household environments. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Anchorage, Alaska, 2010.
- [12] F. Enders, C. Plagemann, C. Stachniss, and W. Burgard. Scene analysis using latent dirichlet allocation. In *Proc. of Robotics: Science and Systems (RSS)*, Seattle, WA, USA, 2009.
- [13] K.M. Wurm, R. Kümmerle, C. Stachniss, and W. Burgard. Improving robot navigation in structured outdoor environments by identifying vegetation from laser data. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, St. Louis, MO, USA, 2009.
- [14] A. Schneider, J. Sturm C. Stachniss, M. Reisert, H. Burkhardt, and W. Burgard. Object identification with tactile sensors using bag-of-features. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, St. Louis, MO, USA, 2009.
- [15] W. Burgard, C. Stachniss, G. Grisetti, B. Steder, R. Kümmerle, C. Dornhege, M. Ruhnke, A. Kleiner, and J.D. Tardós. Trajectory-based comparison of SLAM algorithms. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, St. Louis, MO, USA, 2009.
- [16] J. Sturm, V. Predeap, C. Stachniss, C. Plagemann, K. Konolige, and W. Burgard. Learning kinematic models for articulated objects. In *Proc. of the Int. Conf. on Artificial Intelligence (IJCAI)*, Pasadena, CA, USA, 2009.
- [17] H. Strasdat, C. Stachniss, and W. Burgard. Which landmark is useful? learning selection policies for navigation in unknown environments. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Kobe, Japan, 2009.
- [18] B. Frank, C. Stachniss, R. Schmedding, W. Burgard, and M. Teschner. Real-world robot navigation amongst deformable obstacles. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Kobe, Japan, 2009.
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