

# Curriculum Vitae

Cyrill Stachniss

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<https://scholar.google.com/citations?user=8vib2IAAAAAJ>

<https://www.youtube.com/c/CyrillStachniss>



## Areas of Interest

Probabilistic robotics; photogrammetry; perception and state estimation; simultaneous localization and mapping; mobile sensing; navigation; agriculture robotics; classification; multi-robot coordination; learning techniques for autonomous systems

## 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

- Full professor and chair for Photogrammetry since 04/2014  
University of Bonn, Institute of Geodesy and Geoinformation
- University lecturer (Privatdozent und Akademischer Rat) 10/2010-03/2014  
University of Freiburg, Institute for Computer Science
- Deputy professorship at the Autonomous Intelligent Systems Lab 10/2009-09/2010  
during the sabbatical of Prof. Dr. Wolfram Burgard (W3-Lehrstuhlvertretung)  
University of Freiburg, Institute for Computer Science
- Guest lecturer spring 2009  
University of Zaragoza (Spain), Departamento Informática e Ingeniería de Sistemas
- Akademischer Rat 10/2007-09/2009  
University of Freiburg, Institute for Computer Science
- Postdoc 11/2006-09/2007  
University of Freiburg, Institute for 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, Institute for Computer Science, Lab for Autonomous Intelligent Systems  
headed by Prof. Dr. Wolfram Burgard

## Academic Activities and Memberships

- Member of the “Ausschnuss Geodäsie der Bayerischen Akademie der Wissenschaften”, Munich since 11/2015
- Deputy Director of the Institute of Geodesy and Geoinformation since 10/2015  
University of Bonn
- Vorstand (executive board) der Außenlabore Agrar-Geodäsie-Ernährung since 01/2016  
University of Bonn

## Citation Indices

h-index: 45, i10-index: 97, citations: 9152 (determined using “Google Scholar” on Apr 5)

## Honors and Awards

- ICRA 2015 Best Service Robotics Paper Finalist 2015  
for the work *Robot, Organize my Shelves! Tidying up Objects by Predicting User Preferences*
- Faculty Teaching Award (Fakultätslehrpreis) 2013  
for my lecture *Robot Mapping* taught in winter term 2012/13
- IEEE RAS Early Career Award 2013  
for my contributions to mobile robot exploration and simultaneous localization and mapping

- ICRA 2013 Best Associate Editor Award 2013
- ICRA 2013 Best Student Paper Finalist 2013  
for the work *Robust Map Optimization Using Dynamic Covariance Scaling*
- Robotics: Science and Systems Early Career Spotlight 2012
- Microsoft Research Faculty Fellow 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 Best Student Paper Finalist 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*

## Research Project Coordination Activities

- Coordinator (Sprecher) of the DFG funded research unit “Mapping on Demand” 2015-2017
- Coordinator of the EC funded FP7 project ROVINA 2013-2016
- Vice-Coordinator of the EC funded FP7 project EUROPA2 2013-2014
- “Vorstandsmitglied” in the SFB-TR/8 “Spatial Cognition” 2013-2014
- Vice-Coordinator and scientific project manager of the FP7 project First-MM 2010-2013
- Vice-Coordinator and scientific project manager of the FP7 project EUROPA 2009-2012

## Funded Projects

- Principal investigator of the project “Exploration for Micro Aerial Vehicles” 2015-2017  
Funded by the DFG with in the Research Unit “Mapping on Demand”.
- Principal investigator of the project “Incremental Mapping from Image Sequences”. 2015-2017  
Funded by the DFG with in the Research Unit “Mapping on Demand”.
- Principal investigator of the project “Robust Direct Georeferencing” 2015-2017  
of Lightweight UAV. Funded by the DFG with in the Research Unit “Mapping on Demand”.
- Principal investigator of the project Flourish 2015-2018  
Flourish—Aerial Data Collection and Analysis, and Automated Ground Intervention for Precision Farming. Funded by the European Commission, H2020.
- Principal investigator of the project RobDREAM 2015-2018  
RobDREAM—Optimising Robote Performance While Dreaming. Funded by the European Commission, H2020.
- Principal investigator of the project AdvancedEDC 2014-2015  
AdvancedEDC—Advanced Intracortical Neural Probes with Electronic Depth Control. Funded by the DFG with in the cluster of excellence BrainLinks–BrainTools.

- Vice-Coordinator and principal investigator of the EU project EUROPA2 2013-2016  
EUROPA2—European Robotic Pedestrian Assistant 2.0. Funded by the European Commission, FP7.
- Principal investigator of the EU project STAMINA 2013-2017  
STAMINA—Sustainable and Reliable Robotics for Part Handling in Manufacturing Automation. Participation ended with the move to the University of Bonn, FP7.
- Coordinator and principal investigator of the EU project ROVINA 2013-2016  
ROVINA—Mobile Robots for Exploration, Digital Preservation and Visualization of Archeological Sites. Evaluated in the FP7-ICT-Call 9 with 15/15 points. Funded by the European Commission, FP7.
- Principal investigator of a project with ifm automotive 2012  
on the automatic evaluation of an obstacle detection systems for cars. Funded by ifm automotive GmbH.
- Principal investigator of a project in 3<sup>rd</sup> phase of the SFB/TR-8 2011-2014  
SFB/TR-8 “Spatial Cognition”, Project A3-MultiBot, funded by the German Research Foundation (DFG).
- 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.
- Vice-Coordinator and principal investigator of the EU project First-MM 2010-2013  
First-MM—Flexible Skill Acquisition and Intuitive Robot Tasking for Mobile Manipulation in the Real World. Funded by the European Commission, FP7.
- Vice-Coordinator and principal investigator 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 3 on robotics and cognitive systems
- Principal investigator of a project on service robotics in industrial applications 2008-2010  
Funded by the MT Robotik AG.
- Principal investigator of a project in the 2<sup>nd</sup> phase of the SFB/TR-8 2007-2010  
SFB/TR-8 “Spatial Cognition”, Project A3-MultiBot, funded by the German Research Foundation (DFG).
- Principal investigator of 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 of a project on navigation and service robotics 2007-2009  
Funded by Toyota Europe.
- Principal investigator of a project on robust simultaneous localization and mapping 2006  
Funded by Toyota Europe. Involved in the acquisition and realization of this project.
- Contributions to projects without being a principal investigator  
EU project BACS (2006-2009); BMBF project DESIRE (2006-2009); EU project CoSy (2004-2008); SFB/TR-8 “Spatial Cognition”, 1<sup>st</sup> phase (2003-2006); EU project WebFAIR (2001-2003)

## Consulting for Industry

- KUKA Roboter/KUKA Laboratories, Augsburg, Germany 2008-2014
- Numovis Inc., Menlo Park, CA, USA 2010-2011
- MT Robotik AG, Zwingen, Switzerland 2008-2010

## Invited Talks

- Keynote speech at the XXIII ISPRS Congress, Prague, Czech Republic 07/2016  
*ROVINA & EUROPA2: Flexible Navigation for Mobile Robots in the Real World*
- DVW Seminar Vermessung mit unbemannten Flugsystemen, Bonn, Germany 02/2016  
*Was braucht man für autonome Kopter?*
- Tag der Geodäsie 2015 (Geodesy Day 2015), Bonn, Germany 05/2015  
*Vermessung mit Oktokoptern*
- DVW Seminar on Multi-Sensor-Systems, Hamburg, Germany 09/2014  
*Tutorial on Particle Filters for State Estimation*
- Abschlusskolloquium SFB/TR-8 Spatial Cognition, Bremen, Germany 09/2014  
*Localization, Mapping, and Exploration – Achievements and Open Challenges*
- Plenary talk at the Int. Conf. on Intelligent Autonomous Systems, Padua, Italy 07/2014  
*Flexible Longterm Navigation for Mobile Robots Operating in the Real World*
- Tag der Geodäsie 2014 (Geodesy Day 2014), Bonn, Germany 05/2014  
*Wie Roboter die Welt verstehen*
- University of Stuttgart, Germany 02/2014  
*Autonomous Navigation for Mobile Robots in the Real World*
- KUKA Tec Camp, Augsburg, Germany 02/2014  
*Probabilistic State Estimation*
- Forum für Mathematik und Naturwissenschaften, Freiburg, Germany 05/2013  
*Robots and Probabilities – A Success Story*
- Meeting of the German National Academy of Sciences Leopoldina, Section 2 02/2013  
*Robots in Urban Environments*
- Technical University of Cottbus, Germany 02/2013  
*Probabilistische Methoden für die Roboternavigation*
- Radboud University Nijmegen, The Netherlands 02/2013  
*Towards Lifelong Navigation for Mobile Robots*
- University of Bonn, Germany 01/2013  
*Probabilistische Methoden für die Perzeption und Entscheidungsfindung – von grundlegenden Problemen zu realen Systemen*
- Robotics: Science and Systems Early Career Spotlight, Sydney, AUS 07/2012  
*Towards Lifelong Navigation for Mobile Robots*
- RSS Workshop on Stochastic Motion Planning, Sydney, AUS 07/2012  
*Mutual Information for Effective Localization, Mapping and Exploration*

- 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

- *Photogrammetry I* since 2014  
University of Bonn, BSc, lecture, 5 h/week, every summer term
- *Photogrammetry II* since 2014  
University of Bonn, BSc, lecture, 3 h/week, every winter term
- *Photogrammetry and Remote Sensing* since 2014  
University of Bonn, MSc, lecture, 3 h/week, every winter term
- *Robot Mapping* 2013/14 & 2014/15  
University of Freiburg, MSc, lecture, 4 h/week, winter term
- *Introduction to Mobile Robotics* 2007 – 2013  
University of Freiburg, MSc, lecture, 4 h/week, shared teaching, summer term
- *Advanced Techniques for Mobile Robotics/Robotics II* 2009/10 – 2011/12  
University of Freiburg, MSc, lecture, 4 h/week, shared teaching, winter term
- *Einführung in die Informatik (Introduction to CS)* 2007 – 2013  
University of Freiburg, BSc, lecture, 4 h/week, partially shared teaching, summer term
- Other lectures (Wahlpflichtmodule), University of Bonn, MSc, 4 h/week
  - *3D Mapping* 2016/17
  - *Robot Programming using ROS* 2016/17
  - *Introduction to C++ for Image Processing* since 2015
  - *Dense Fisheye Stereo* 2015/16
  - *Autonomous Exploration for 3D Reconstruction* 2014/15
  - *Exploration of Unknown Environments with Mobile Platforms* 2014
- Master Projects, University of Bonn, MSc, 5 h/week, every term
  - *Mobile Mapping with Multi-Sensor Systems* since 2015
- *Simultaneous Localization and Mapping* 2009  
Guest lecturer at the University of Zaragoza (Spain), Ph.D. course
- Practical Courses, University of Freiburg, MSc, 2 h/week, partially shared teaching
  - *People Localization* 2012/13
  - *Simultaneous Localization and Mapping* 2010/11
  - *Autonomous Slotcar Racing* 2009/08
  - *Location-based Services* 2007/08
  - *The Robot Photographer* 2004/05
- Seminars, University of Freiburg, MSc, 2 h/week, shared teaching

- *Humanoid Robots* 2010 & 2012
- *Probabilistic Graphical Models* 2011
- *Robot Navigation* 2009/10
- *Motion Planning* 2007/08

## External Ph.D. Committee Memberships

- University of Hannover, Germany 2016
- University of Freiburg, Germany 2014–2016
- University of Oxford, UK 2014
- Queensland University of Technology, Australia 2014
- KTH Stockholm, Sweden 2012
- University of Sydney, Australia 2011
- Polytechnic University of Catalonia, Barcelona, Spain 2011
- University of Zaragoza, Spain 2008

## Advisory Board Membership

- ILIAD – Intra-Logistics with Integrated Automatic Deployment since 2015

## Services for Journals

- Senior Editor for the IEEE Robotics and Automation Letters (RA-L) since 2015
- Associate Editor for the IEEE Transactions on Robotics (T-RO) 2008-2013
- Guest Editor for the Journal of Field Robotics for the special issue on Visual Mapping and Navigation Outdoors 2009/2010
- Reviewing
  - Journal of Geodesy (JOG) 2015
  - ISPRS Journal of Photogrammetry and Remote Sensing 2014,2016
  - IEEE Transactions on Robotics (T-RO) since 2004
  - Autonomous Robots (AuRo) 2004-2008,2010,2011,2014
  - Int. Journal on Robotics Research (IJRR) 2006, 2008, 2009, 2011-2016
  - Robots and Autonomous Systems (RAS) since 2005
  - Journal of Field Robotics (JFR) 2007-2010
  - Artificial Intelligence 2013
  - IEEE Transactions on Mechatronics (T-MECH) 2012
  - IEEE Transactions on Autonomous Mental Development 2012
  - 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) 2007,2013
- Int. Journal of Pattern Recognition and Artificial Intelligence (IJPRAI) 2007

## Conference Services

- General Organization
  - Int. Conf. on Unmanned Aerial Vehicles in Geomatics (UAVg) 2017
- Program Chair
  - Int. Conf. on Unmanned Aerial Vehicles in Geomatics (UAVg) 2017
  - Spatial Cognition (SC) 2012
- Area Chair
  - Robotics: Science and Systems (RSS) 2010, 2012
  - Int. Joint Conf. on Artificial Intelligence (IJCAI) 2013
- Associate Editor
  - IEEE Int. Conf. on Robotics & Automation (ICRA) 2009-2015
  - IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS) since 2011
- Senior Programm Committee
  - Int. Joint Conf. on Artificial Intelligence (IJCAI) 2017
- 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) 2005–2015
  - 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)
  - Spatial Cognition (SC) 2012, 2014
  - 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. Conf. on Computer Vision (ICCV) 2015
  - Conf. on Computer Vision and Pattern Recognition (CVPR) 2015
  - 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
  - ACM/IEEE Int. Conf. on Human-Robot Interaction (HRI) 2014
  - Int. Conf. on Field and Service Robotics (FSR) 2007
  - Annual Meeting of the Cognitive Science Society (CogSci) 2013
  - 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

## Workshop/Symposia Services

- Organizer
  - ICRA Workshop on “What Sucks in Robotics and How to Fix It - Lessons Learned from Building Complex Systems” 2014
  - FAIM Workshop on Cognitive Technical Systems 2014
  - RSS Workshop on Robotic Exploration, Monitoring, and Information Collection 2013
  - ICRA Workshop on Visual Mapping and Navigation in Outdoor Environments 2009
- Program Committee
  - RSS Workshop on multiple view geometry in robotics (MVGRO) 2014, 2015
  - ICRA Workshop Proposal “Got rejected? Let the community review your paper!” 2015
  - Int. Workshop on the Algorithmic Foundations of Robotics (WAFR) 2012
  - Starting Artificial Intelligence Research Symposium (STAIRS) 2012
  - RSS Workshop on Long-term Operation in Changing Environments 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, 2015

## Other Reviewing Services

- National Research Foundation South Africa 2016
- U.S.-Israel Binational Science Foundation 2015
- European Commission, ERC Grants 2014
- Deutsche Forschungsgemeinschaft (DFG) 2014
- Alexander von Humboldt Foundation 2014, 2015
- Netherlands Organisation for Scientific Research (NWO) 2010, 2013
- Microsoft Research Faculty Fellowships 2011
- Springer STAR series 2010

## 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

## Peer-Reviewed Journal/Magazine Articles

- [1] I. Bogoslavskyi and C. Stachniss. Efficient online segmentation for sparse 3d laser scans. *PFG – Journal of Photogrammetry, Remote Sensing and Geoinformation Science*, pages 41–52, 2017.
- [2] O. Vysotska and C. Stachniss. Improving slam by exploiting building information from publicly available maps and localization priors. *PFG – Journal of Photogrammetry, Remote Sensing and Geoinformation Science*, 85(1):53–65, 2017.
- [3] C. Merfels and C. Stachniss. Sensor fusion for self-localisation of automated vehicles. *PFG – Journal of Photogrammetry, Remote Sensing and Geoinformation Science*, 2017.
- [4] P. Lottes, M. Hoferlin, S. Sanders, and C. Stachniss. Effective vision-based classification for separating sugar beets and weeds for precision farming. *Journal of Field Robotics*, 2016.
- [5] N. Abdo, C. Stachniss, L. Spinello, and W. Burgard. Organizing objects by predicting user preferences through collaborative filtering. *The Int. Journal of Robotics Research (IJRR)*, 2016.
- [6] O. Vysotska and C. Stachniss. Lazy data association for image sequences matching under substantial appearance changes. *IEEE Robotics and Automation Letters (RA-L)*, 1(1):1–8, 2016.
- [7] J. Schneider, C. Stachniss, and W. Förstner. On the accuracy of dense fisheye stereo. *IEEE Robotics and Automation Letters (RA-L)*, 1(1):227–234, 2016.
- [8] S. Osswald, M. Bennewitz, W. Burgard, and C. Stachniss. Speeding-up robot exploration by exploiting background information. *IEEE Robotics and Automation Letters (RA-L)*, 2016.
- [9] D. Perea Ström, I. Bogoslavskyi, and C. Stachniss. Robust exploration and homing for autonomous robots. *Journal on Robotics and Autonomous Systems (RAS)*, 2016. In press.
- [10] Ch. Beekmans, J. Schneider, T. Laebe, M. Lennefer, C. Stachniss, and C. Simmer. Cloud photogrammetry with dense stereo for fisheye cameras. *Atmospheric Chemistry and Physics*, 16:14231–14248, 2016.
- [11] Pratik Agarwal, Wolfram Burgard, and Cyrill Stachniss. A survey of geodetic approaches to mapping and the relationship to graph-based slam. *IEEE Robotics & Automation Magazine*, 2014.
- [12] R. Kümmerle, M. Ruhnke, B. Steder, C. Stachniss, and W. Burgard. Autonomous robot navigation in highly populated pedestrian zones. *Journal of Field Robotics*, 2014.
- [13] B. Frank, C. Stachniss, R. Schmedding, M. Teschner, and W. Burgard. Learning object deformation models for robot motion planning. *Journal on Robotics and Autonomous Systems (RAS)*, 2014.
- [14] C. Stachniss and W. Burgard. Particle filters for robot navigation. *Foundations and Trends in Robotics*, 3(4):211–282, 2012. Published 2014.
- [15] W. Burgard and C. Stachniss. Gestatten, Obelix! *Forschung – Das Magazin der Deutschen Forschungsgemeinschaft*, 1, 2013. In German, invited.
- [16] D. Maier, C. Stachniss, and M. Bennewitz. Vision-based humanoid navigation using self-supervised obstacle detection. *The Int. Journal of Humanoid Robotics (IJHR)*, 2013.

- [17] K.M. Wurm, C. Dornhege, B. Nebel, W. Burgard, and C. Stachniss. Coordinating heterogeneous teams of robots using temporal symbolic planning. *Autonomous Robots*, 2013.
- [18] K.M. Wurm, H. Kretzschmar, R. Kümmerle, C. Stachniss, and W. Burgard. Identifying vegetation from laser data in structured outdoor environments. *Journal on Robotics and Autonomous Systems (RAS)*, 2013.
- [19] A. Hornung, K.M. Wurm, M. Bennewitz, C. Stachniss, and W. Burgard. OctoMap: An efficient probabilistic 3d mapping framework based on octrees. *Autonomous Robots*, 34:189–206, 2013.
- [20] H. Kretzschmar and C. Stachniss. Information-theoretic pose graph compression for laser-based SLAM. *The Int. Journal of Robotics Research (IJRR)*, 31:1219–1230, 2012.
- [21] J. Sturm, C. Stachniss, and W. Burgard. A probabilistic framework for learning kinematic models of articulated objects. *Journal on Artificial Intelligence Reserach (JAIR)*, 41:477–526, 2011.
- [22] 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.
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## Peer-Reviewed Symposium/Workshop Papers

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- [3] S. Asadi, M. Reggente, C. Stachniss, C. Plagemann, and A.J. Lilienthal. *Intelligent Systems for Machine Olfaction: Tools and Methodologies*, chapter Statistical Gas Distribution Modelling using Kernel Methods, pages 153–179. IGI Global, 2011.
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