

Curriculum Vitae

Wolfram Burgard

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Work Address:

University of Freiburg, Department of Computer Science
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Lerchenstr. 35
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Born:

February 8, 1961, in Gelsenkirchen

Research Interests

- Robotics
- Artificial intelligence
- Autonomous intelligent/mobile systems (probabilistic algorithms, service robots, networked robots, embedded systems)
- State estimation (statistical algorithms, sensor models)

Education

- Dr. rer.-nat. (Ph.D.), University of Bonn, Germany December 1991
Computer Science.
- Diplom (M.Sc.), University of Dortmund, Germany April 1987
Computer science (major) and Mathematics (minor).
- Vordiplom (B.Sc.), University of Dortmund, Germany March 1984
Computer science (major), Mathematics (minor).

Academic Positions

- Full professor 2006 - today
University of Freiburg, Department of Computer Science.
- Associate professor 1999 - 2006
University of Freiburg, Department of Computer Science.
- Research scholar, 03-10/2002
Carnegie Mellon University, School of Computer Science.
- Research scientist (Akad. Rat) 1991 - 1999
University of Bonn, Department of Computer Science.
- Ph.D. student and research associate, 1990-1991
University of Bonn, Department of Computer Science.
- Ph.D. student and research associate, 1987-1990
University of Dortmund, Department of Computer Science.

Adjunct Positions

- Adjunct faculty member 2000 - 2005
Carnegie Mellon University, Center of Automated Learning and Discovery (CALD).

Services in Academic Positions

- Spokesperson of the Cluster of Excellence BrainLinks-BrainTools Oct. 2012 - today
University of Freiburg.
- Spokesperson of the Graduate School Embedded Microsystems Oct. 2010 - 2015
University of Freiburg.
- Vice Dean of the Technical Faculty Oct. 2010 - Sept. 2012
University of Freiburg.
- Director of the Department of Computer Science Sept. 2006 - Sept. 2010
University of Freiburg.
- Dean for student affairs (Studiendekan) Oct. 2000 - Dec. 2004
University of Freiburg, Department of Computer Science.
- Acting Director of the Department of Computer Science Oct. 2002 - Apr. 2003
University of Freiburg, Department of Computer Science.
- Administrator of the Rector of the University of Freiburg for affairs of the European Commission (EU-Beauftragter des Rektors) Oct. 2000 - 2004
University of Freiburg, Department of Computer Science.
- Representative of the scientific staff, 1998-1999
University of Bonn, Department of Computer Science.

Awards

- **IV 2018 best paper award.** IEEE Intelligent Vehicles Symposium (IV), *Courtesy Behavior for Highly Automated Vehicles on Highway Interchanges*, 2018.
- **ICRA 2018 best robot vision paper award.** IEEE International Conference on Robotics and Automation (ICRA), *Optimization Beyond the Convolution: Generalizing Spatial Relations with End-to-End Metric Learning*, 2018.
- **AAAI 1999 Classic Paper Award**, 2017.
- **AAAI 1998 Classic Paper Award**, 2016.
- **euRobotics Technology Transfer Award**, 2015.
- **ERC Advanced Grant**, 2010.
- **Gottfried Wilhelm Leibniz Prize**, 2009.
- **Most Useful Contribution Award**, ROS 3D Kinect Contest, Willow Garage, 2011.
- **IROS 2010 best paper award.** IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), *Probabilistic Rule Set Joint State Update as Approximation to the Full Joint State Estimation Applied to Multi Object Scene Analysis*, 2010.
- **UAV 2010 best paper award.** International Conference and Exhibition on Unmanned Aerial Vehicles (UAV), *Towards Palm-Size Autonomous Helicopters*, 2010

- **ICRA 2009 best paper award.** IEEE International Conference on Robotics and Automation (ICRA), *Towards a Navigation System for Autonomous Indoor Flying*, 2009.
- **Most active IEEE technical committee award.** IEEE International Conference on Robotics & Automation (ICRA), 2005.
- **IROS 2004 best paper award on applications.** IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), *Exploration with Active Loop-Closing for FastSLAM*, 2004.
- **2004 IJCAII-JAIR honorable mention award.** *Markov Localization for Mobile Robots in Dynamic Environments*, Journal of Artificial Intelligence Research (JAIR), 11, 1999.
- **INRIA-EPFL prize for the IROS 2002 best paper on Mobile Robot Navigation and Perception.** IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), *Mapping with mobile Robots in Populated Environments*, 2002.
- **ICRA 2000 best paper award.** IEEE International Conference on Robotics & Automation (ICRA), *A Real-Time Algorithm for Mobile Robot Mapping with Applications to Multi-Robot and 3D Mapping*, 2000.
- **AAAI 1998 outstanding paper award.** National Conference on Artificial Intelligence (AAAI), *The Interactive Museum Tour-guide Robot*, 1998.
- **DAGM 1999 outstanding paper award.** 21st Symposium on Pattern Recognition (DAGM), *Collaborative Multi-Robot Localization*, 1999.
- **IROS 1998 best paper award.** IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), *An Experimental Comparison of Localization Methods*, 1998.
- **KI 1998 best paper award.** 22nd German Conference on Artificial Intelligence (KI), *GOLEX - Bridging The Gap between Logic (Golog) and a Real Robot*, 1998.
- **AAAI 1994 autonomous mobile robot competition second place award.** *Clean-up an office event* of the 1994 AAAI autonomous mobile robot competition, 1994.

Other Achievements

- **Fellow** of the Institute of Electrical and Electronics Engineers (**IEEE**), 2015.
- **Member of the Akademie der Wissenschaften Leopoldina**, 2014.
- **Classic Paper Honorable Mention Award** of the Association for the Advancement of Artificial Intelligence (AAAI) for the 1996 paper *Estimating the Absolute Position of a Mobile Robot using Position Probability Grids*, 2014.
- **Best paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *An Approach to Solving Large-Scale SLAM Problems with a Small Memory Footprint*, 2014.
- **Best cognitive robotics paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *Learning to Give Route Directions from Human Demonstrations*, 2014.
- **Best student paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *Robust Map Optimization using Dynamic Covariance Scaling*, 2013.
- **Member of the Heidelberger Akademie der Wissenschaften**, 2012.
- **Fellow** of the Association for the Advancement of Artificial Intelligence (**AAAI**), 2009.
- **Fellow** of the European Coordinating Committee for Artificial Intelligence (**ECCAI**), 2008.
- **Distinguished Lecturer** of the IEEE Robotics and Automation Society, 2005-2007.

- **Best paper award finalist** of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), *Unsupervised learning of compact 3d models based on the detection of recurrent structures*, 2010.
- **Best cognitive robotics paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *Mapping Indoor Environments Based on Human Activity*, 2010.
- **Best student paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *Mapping Indoor Environments Based on Human Activity*, 2010.
- **Best student paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *Supervised learning of places from range data using AdaBoost*, 2005.
- **Best vision paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *Tracking Multiple Moving Targets with a Mobile Robot using Particle Filters and Statistical Data Association*, 2001.
- **Special track for distinguished papers** of the International Conference on Artificial Intelligence (IJCAI), *A Real-Time Algorithm for Mobile Robot Mapping with Applications to Multi-Robot and 3D Mapping*, 2001.

Projects

- **RobDream**: Optimizing Robot Performance while Dreaming, EU-Horizon 2020, 2015-2018.
- **Squirrel**: Clearing clutter bit by bit, EU-IST IP, 2013-2018.
- **EUROPA2**: European Pedestrian Robot 2. EU-IST STREP, 2013-2018 (Coordinator).
- **BrainLinks-BrainTools**: Cluster of Excellence, German Research Foundation, German Research Foundation, 2012-2018.
- **Rovina**: Robots for Exploration, Digital Preservation and Visualization of Archeological Sites, EC, 2013-2015.
- **HYBRIS-C1**: Planning and Action Control under Uncertainty for Mobile Manipulation Tasks, German Research Foundation, 2012-2014.
- **Tidy-up-Robot**: Mobile Manipulation in Real-World-Environments. PR-2 Beta Program, Willow Garage, 2010-2012.
- **TAPAS**: Robotics-enabled Logistics and Assistive Services for the Transformable Factory of the Future. EU-IST STREP, 2010-2014.
- **RADHAR**: Robotic Adaptation of Robots Adapting to Humans. EU-IST STREP, 2010-2013.
- **First-MM**: Flexible Skill Acquisition and Intuitive Robot Tasking for Mobile Manipulation in the Real World. EU-IST STREP, 2010-2013 (Coordinator).
- **EUROPA**: European Pedestrian Robot. EU-IST STREP, 2009-2012 (Coordinator).
- Mobile Robot Navigation: KUKA Roboter GmbH.
- **RAWSEEDS**: Robotics Advancement through Web-publishing of Sensorial and Elaborated Extensive Data Sets. EU-IST SSA, 2006-2009.
- **SLAM**: Simultaneous Mapping and Localization, Toyota Europe, 2007-2009.
- Technology for Operations. ESA, 2007.
- Situation Recognition. Siemens AG, 2006-2008.
- **muFly**: Fully Autonomous Micro Helicopter. EU-IST STREP, 2006-2009.

- **INDIGO**: Interaction with Personality and Dialogue Enabled Robots. EU-IST STREP, 2006-2009.
- **E μ S**: Graduate School Embedded Microsystems. German Research Foundation, 2005-2008.
- **CoSy**: Cognitive Systems for Cognitive Assistants. EU-IST IP, 2005-2008.
- **DESIRE**: German Service-Robotics-Initiative. German Ministry for Education and Research (BMBF), 2005-2008.
- **MultiRob**: Multi-Robot-Coordination. Project within the Transegeional Research Center Spatial Cognition (SFB-TR8). 2003-2014.
- **3D-Map**: Three-Dimensional Map Construction. Project within the Transegeional Research Center Spatial Cognition (SFB-TR8), 2003-2014.
- **ObjectSpace**: Human and robot navigation in structured environments. Project within the Transegeional Research Center Spatial Cognition (SFB-TR8), 2007-2014.
- **WEBFAIR**: Web-Based Tele-Presence on Trade-Fairs with Mobile Robots. EU-IST Project, 2001-2004.
- **TOURBOT**: Museum Tele-Presence through Robotic Avatars. EU-IST Project, 2000-2001.
- **Robotic Tele-Lab**: Ministry for Research of the state Northrhine Westfalia, 1997-1999.
- Documentation Information and Communication Technology NRW. Ministry for Research of the state Northrhine Westfalia, 1996-1997.
- Illumination Planning for Hardcoal Mines. Ruhrkohle Bergbau AG, 1990-1992.

Graduated Students

1. Dirk Hähnel, 2004
2. Maren Bennewitz, 2005
3. Cyrill Stachniss, 2006
4. Rudolph Triebel, 2007
5. Patrick Pfaff, 2008
6. Óscar Martínez Mozos, 2008
7. Christian Plagemann, 2008
8. Jürgen Sturm, 2011
9. Daniel Meyer-Delius Di Vasto, 2011
10. Slawomir Grzonka, 2011
11. Thilo Grundmann, 2012
12. Kai Wurm, 2012
13. Axel Rottmann, 2012
14. Barbara Frank, 2013
15. Rainer Kümmerle, 2013
16. Bastian Steder, 2013
17. Jörg Müller, 2013
18. Dominik Joho, 2013

19. Boris Lau, 2013
20. Maximilian Beinhofer, 2014
21. Henrik Kretschmar, 2014
22. Michael Ruhnke, 2014
23. Pratik Agarwal, 2015
24. Jürgen Hess, 2015
25. Felix Endres, 2015
26. Markus Kuderer, 2015
27. Christoph Sprunk, 2015
28. Annett Stelzer, 2016
29. Nichola Abdo, 2017
30. Benjamin Suger, 2017
31. Jörg Röwekämper, 2017
32. Tayyab Naseer, 2017
33. Burget, Felix, 2018

Patents

- Object recognition method, object recognition apparatus and autonomous mobile robot

Publication List

BOOKS / PROCEEDINGS

- [1] A. Bicchi and W. Burgard, editors. *Robotics Research*. Springer, 2017. Proc. of the International Symposium on Robotics Research (ISRR), 2015.
- [2] E. Prassler, R. Bischoff, W. Burgard, R. Haschke, M. Hägele, G. Lawitzky, B. Nebel, P. Plöger, U. Reiser, and M. Zöllner. *Towards Service Robots for Everyday in Environments*, volume 76 of *Springer Tracts in Advanced Robotics (STAR)*. Springer, 2012.
- [3] W. Burgard, R. Dillmann, C. Plagemann, and N. Vahrenkamp, editors. *Proc. of the 10th International Conference on Intelligent Autonomous Systems (IAS)*. IOS Press, July 2008.
- [4] W. Burgard, O. Brock, and C. Stachniss, editors. *Proc. of the Robotics - Science and Systems (RSS)*, 2007.
- [5] G. Sukhatme, S. Schaal, D. Fox, and W. Burgard, editors. *Proc. of the Robotics - Science and Systems (RSS)*, 2006.
- [6] S. Thrun, W. Burgard, and D. Fox. *Probabilistic Robotics*. MIT Press, 2005.
- [7] H. Choset, K. Lynch, S. Hutchinson, G. Kantor, W. Burgard, L. Kavraki, and S. Thrun. *Principles of Robot Motion: Theory, Algorithms and Implementation*. MIT Press, 2005.
- [8] A. Borkowski, W. Burgard, and P. Zingaretti, editors. *Proc. of the first European Conference on Mobile Robots (ECMR)*, 2003.
- [9] W. Burgard, U. Nehmzow, S. Vestli, and G. Schweizer, editors. *Proc. of the third European Workshop on Advanced Mobile Robots (EUROBOT)*, 1999.

- [10] W. Burgard, T. Christaller, and A. Cremers, editors. *Proc. of the 22nd German Conference on Artificial Intelligence (KI)*, LNCS. Springer Verlag, 1999.

BOOK CHAPTERS / COLLECTIONS

- [1] W. Burgard, M. Hebert, and M. Bennewitz. World modeling. In B. Siciliano and O. Khatib, editors, *Springer Handbook of Robotics*, chapter 36, pages 1135–1152. Springer Verlag, 2016.
- [2] K. Arras, B. Lau, S. Grzonka, M. Lubner, O. Martinez-Mozos, D. Meyer-Delius, and W. Burgard. Range-based people detection and tracking for socially enabled service robots. In E. Prassler, R. Bischoff, W. Burgard, R. Haschke, M. Hägele, G. Lawitzky, B. Nebel, P. Plöger, U. Reiser, and M. Zöllner, editors, *Towards Service Robots for Everyday in Environments*, volume 76 of *Springer Tracts in Advanced Robotics (STAR)*, pages 235–280. Springer, 2012.
- [3] O. Martínez Mozos, C. Stachniss, A. Rottmann, and W. Burgard. Using AdaBoost for place labeling and topological map building. In S. Thrun, R. Brooks, and H. Durrant-Whyte, editors, *Robotics Research: Results of the 12th International Symposium ISRR.*, volume 28 of *STAR Springer tracts in advanced robotics*, pages 453–472. Springer, 2007.
- [4] W. Burgard, C. Stachniss, and D. Haehnel. Mobile robot map learning from range data in dynamic environments. In C. Laugier and R. Chatila, editors, *Autonomous Navigation in Dynamic Environments*, volume 35 of *STAR Springer tracts in advanced robotics*. Springer Verlag, 2007.
- [5] M. Bennewitz and W. Burgard. Serviceroboter für den Pflegebereich. In Fenger, Kolb, Nikolaus, Raem, and Rychlik, editors, *Handbuch Geriatrie*. Deutsche Krankenhaus Verlagsgesellschaft mbH, Düsseldorf, 2005. In German.
- [6] W. Burgard, M. Moors, and F. Schneider. Collaborative exploration of unknown environments with teams of mobile robots. In M. Beetz, J. Hertzberg, M. Ghallab, and M. Pollack, editors, *Advances in Plan-Based Control of Robotic Agents*, volume 2466 of *LNCS*. Springer Verlag, 2002.
- [7] W. Burgard and D. Schulz. Robust visualization for web-based control of mobile robots. In K. Goldberg and R. Siegwart, editors, *Robots on the Web: Physical Interaction through the Internet*. MIT-Press, 2001.
- [8] D. Fox, S. Thrun, F. Dellaert, and W. Burgard. Particle filters for mobile robot localization. In A. Doucet, N. de Freitas, and N. Gordon, editors, *Sequential Monte Carlo Methods in Practice*. Springer Verlag, New York, 2000.
- [9] D. Fox, W. Burgard, H. Kruppa, and S. Thrun. Efficient multi-robot localization based on Monte Carlo approximation. In J. Hollerbach and D. Koditschek, editors, *Robotics Research: The Ninth International Symposium*. Springer-Verlag, London, 2000.
- [10] A. Knoll, W. Burgard, and T. Christaller. Robotik. In G. Görz, C.-R. Rollinger, and J. Schneeberger, editors, *Handbuch der Künstlichen Intelligenz*. Oldenbourg, 2000. In German.
- [11] S. Thrun, A. Bücken, W. Burgard, D. Fox, T. Fröhlinghaus, D. Hennig, T. Hofmann, M. Krell, and T. Schimdt. Map learning and high-speed navigation in RHINO. In D. Kortenkamp, R. Bonasso, and R. Murphy, editors, *Artificial Intelligence and Mobile Robots*. MIT/AAAI Press, Cambridge, MA, 1998.
- [12] W. Burgard. Goal-directed forward chaining: A tuple-oriented bottom-up approach. In C. Beierle and L. Plümer, editors, *Logic Programming: Formal Methods and Practical Applications*. Elsevier Science B.V., 1995.

REFEREED JOURNAL/MAGAZINE ARTICLES

- [1] L. Luft, A. Schaefer, T. Schubert, and W. Burgard. Detecting changes in the environment based on full posterior distributions over real-valued grid maps. *IEEE Robotics and Automation Letters (RA-L)*, 3(2):1299–1305, 2018.
- [2] N. Radwan, A. Valada, and W. Burgard. VLocNet++: Deep multitask learning for semantic visual localization and odometry. *IEEE Robotics and Automation Letters (RA-L)*, 2018.
- [3] A. Schaefer, L. Luft, and W. Burgard. Dct maps: Compact differentiable lidar maps based on the cosine transform. *IEEE Robotics and Automation Letters (RA-L)*, 3(2):1002–1009, 2018.
- [4] W. Winterhalter, F. Fleckenstein, C. Dornhege, and W. Burgard. Crop row detection on tiny plants with the pattern hough transform. *IEEE Robotics and Automation Letters (RA-L)*, 3(4):3394–3401, 2018.
- [5] A. Kuhner, T. Schubert, M. Cenciarini, I. K. Wiesmeier, V. A. Coenen, W. Burgard, C. Weiller, and C. Maurer. Correlations between motor symptoms across different motor tasks, quantified via random forest feature classification in parkinson’s disease. *Frontiers in Neurology*, 8:607, 2017.
- [6] A. Valada and W. Burgard. Deep spatiotemporal models for robust proprioceptive terrain classification. *International Journal of Robotics Research (IJRR)*, 36(13–14):1521–1539, 2017.
- [7] D. Speck, C. Dornhege, and W. Burgard. Shakey 2016 - how much does it take to redo shakey the robot? *IEEE Robotics and Automation Letters*, 2(2):1203–1209, 2017.
- [8] N. Abdo, C. Stachniss, L. Spinello, and W. Burgard. Organizing objects by predicting user preferences through collaborative filtering. *International Journal of Robotics Research (IJRR)*, 35(13):1587–1608, 2016.
- [9] P. Schopp, H. Graf, W. Burgard, and Y. Manoli. Self-calibration of accelerometer arrays. *IEEE Transactions on Instrumentation and Measurement*, 65(8):1913–1925, 2016.
- [10] S. Oßwald, M. Bennewitz, W. Burgard, and C. Stachniss. Speeding-up robot exploration by exploiting background information. *IEEE Robotics and Automation Letters*, 1(2):716–723, 2016.
- [11] C. Schwering, T. Niemueller, G. Lakemeyer, N. Abdo, and W. Burgard. Sensor fusion in the epistemic situation calculus. *Journal of Experimental & Theoretical Artificial Intelligence*, 28(5):871–887, 2016.
- [12] C. Sprunk, B. Lau, P. Pfaff, and W. Burgard. An accurate and efficient navigation system for omnidirectional robots in industrial environments. *Autonomous Robots*, 41(2):473–493, 2016.
- [13] H. Kretzschmar, M. Spies, C. Sprunk, and W. Burgard. Socially compliant mobile robot navigation via inverse reinforcement learning. *The International Journal of Robotics Research*, 35(11):1289–1307, 2016.
- [14] F. Endres, J. Hess, J. Sturm, D. Cremers, and W. Burgard. 3D mapping with an RGB-D camera. *IEEE Transactions on Robotics and Automation*, 30(1):177–187, 2014.
- [15] R. Kümmerle, M. Ruhnke, B. Steder, C. Stachniss, and W. Burgard. Autonomous robot navigation in highly populated pedestrian zones. *Journal of Field Robotics*, 32(4):565–589, 2014.
- [16] P. Agarwal, W. Burgard, and C. Stachniss. A survey of geodetic approaches to mapping and the relationship to graph-based slam. *IEEE Robotics & Automation Magazine*, September 2014.
- [17] B. Frank, C. Stachniss, R. Schmedding, M. Teschner, and W. Burgard. Learning object deformation models for robot motion planning. *Robotics and Autonomous Systems*, 2014.

- [18] K. Wurm, H. Kretzschmar, R. Kümmerle, C. Stachniss, and W. Burgard. Identifying vegetation from laser data in structured outdoor environments. *Robotics and Autonomous Systems*, 62:675–684, 2014.
- [19] B. Lau, C. Sprunk, and W. Burgard. Efficient grid-based spatial representations for robot navigation in dynamic environments. *Robotics and Autonomous Systems*, 61(10):1116–1130, 2013.
- [20] M. Beinhofer, J. Müller, and W. Burgard. Effective landmark placement for accurate and reliable mobile robot navigation. *Robotics and Autonomous Systems*, 61(10):1060–1069, 2013.
- [21] J. Müller and W. Burgard. Efficient probabilistic localization for autonomous indoor airships using sonar, air flow, and IMU sensors. *Advanced Robotics*, 27(9):711–724, 2013.
- [22] K. Wurm, C. Dornhege, B. Nebel, W. Burgard, and C. Stachniss. Coordinating heterogeneous teams of robots using temporal symbolic planning. *Autonomous Robots*, 2013.
- [23] S. Grzonka, G. Grisetti, and W. Burgard. A Fully Autonomous Indoor Quadrotor. *IEEE Transactions on Robotics (T-RO)*, 8(1):90–100, 2 2012.
- [24] S. Grzonka, A. Karwath, F. Dijoux, and W. Burgard. Activity-based Indoor Mapping and Estimation of Human Trajectories. *IEEE Transactions on Robotics (T-RO)*, 8(1):234–245, 2 2012.
- [25] J. Sturm, C. Stachniss, and W. Burgard. A probabilistic framework for learning kinematic models of articulated objects. *Journal on Artificial Intelligence Research*, 41:477–526, 2011.
- [26] S. Chitta, J. Sturm, M. Piccoli, and W. Burgard. Tactile sensing for mobile manipulation. *IEEE Transactions on Robotics*, 27(3), 2011.
- [27] R. Kümmerle, B. Steder, C. Dornhege, A. Kleiner, G. Grisetti, and W. Burgard. Large scale graph-based SLAM using aerial images as prior information. *Journal of Autonomous Robots*, 30(1):25–39, 2011.
- [28] S. Bouabdallah, C. Bernes, S. Grzonka, C. Gimkiewicz, A. Brenzikofer, R. Hahn, D. Schafroth, G. Grisetti, W. Burgard, and R. Siegwart. Towards Palm-Size Autonomous Helicopters. *Journal of Intelligent & Robotic Systems*, 61:1–27, 2011.
- [29] B. Lau, K. Arras, and W. Burgard. Multi-model hypothesis group tracking and group size estimation. *International Journal of Social Robotics*, 2(1), 2010.
- [30] G. Grisetti, R. Kümmerle, C. Stachniss, and W. Burgard. A tutorial on graph-based SLAM. *IEEE Intelligent Transportation Magazine*, 2(4):31–43, 2010.
- [31] J. Sturm, C. Plagemann, and W. Burgard. Body schema learning for robotic manipulators from visual self-perception. *Journal of Physiology*, 103(3-5):220–231, 2009.
- [32] 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.
- [33] M. Luber, K. Arras, C. Plagemann, and W. Burgard. Classifying dynamic objects: An unsupervised learning approach. *Autonomous Robots*, 2009.
- [34] S. Grzonka, C. Plagemann, G. Grisetti, and W. Burgard. Look-ahead proposals for robust grid-based SLAM with Rao-Blackwellized particle filters. *International Journal of Robotics Research (IJRR)*, 28(2):191–200, 2009.
- [35] C. Stachniss, O. Martinez 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.

- [36] B. Steder, G. Grisetti, C. Stachniss, and W. Burgard. Visual SLAM for flying vehicles. *IEEE Transactions on Robotics*, 24(5):1088–1093, 10 2008.
- [37] R. Kümmerle, R. Triebel, P. Pfaff, and W. Burgard. Monte Carlo localization in outdoor terrains using multilevel surface maps. *Journal of Field Robotics (JFR)*, 25(6-7):346–359, 2008.
- [38] 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):232–237, 2007.
- [39] G. Grisetti, G. Tipaldi, C. Stachniss, W. Burgard, and D. Nardi. Fast and accurate SLAM with Rao-Blackwellized particle filters. *Journal of Robotics & Autonomous Systems*, 55(1):30–38, 2007.
- [40] P. Pfaff, R. Triebel, and W. Burgard. An efficient extension to elevation maps for outdoor terrain mapping and loop closing. *International Journal of Robotics Research (IJRR)*, 2007.
- [41] 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.
- [42] O. Martínez Mozos, R. Triebel, P. Jensfelt, A. Rottmann, and W. Burgard. Supervised semantic labeling of places using information extracted from sensor data. *Robotics and Autonomous Systems*, 55(5):391–402, May 2007.
- [43] K. Kersting, C. Plagemann, A. Cocora, W. Burgard, and L. De Raedt. Learning to transfer optimal navigation policies. *Advanced Robotics. Special Issue on Imitative Robots*, 21(9), September 2007.
- [44] A. Cocora, K. Kersting, C. Plagemann, W. Burgard, and L. De Raedt. Learning relational navigation policies. *KI - Künstliche Intelligenz, Themenheft Lernen und Selbstorganisation von Verhalten*, 3:12–18, 2006.
- [45] C. Stachniss, D. Hähnel, W. Burgard, and G. Grisetti. On actively closing loops in grid-based FastSLAM. *Journal on Advanced Robotics*, 2005.
- [46] W. Burgard, M. Moors, C. Stachniss, and F. Schneider. Coordinated multi-robot exploration. *IEEE Transactions on Robotics*, 21(3):376–378, 2005.
- [47] J. Wolf, W. Burgard, and H. Burkhardt. Robust vision-based localization by combining an image retrieval system with Monte Carlo localization. *IEEE Transactions on Robotics*, 21(2), 2005.
- [48] 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*, 2004.
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- [2] W. Burgard. PROSPERT: An expert system for the synthesis of chemical processes. Master's thesis, University of Dortmund, Department of Computer Science, 1987. In German.

Professional Activities

CHAIRMANSHIPS / EDITORIAL BOARDS

- Associate Editor of the IEEE International Conference on Robotics and Automation (ICRA), 2018.
- Editor in Chief, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2014-2017.
- Associate Editor of the Journal of Artificial Intelligence Research (JAIR), 2012-2017.
- Program co-chair of the AAAI Conference on Artificial Intelligence (AAA), 2011.
- Program chair of Intelligent Autonomous Systems (IAS), 2008.
- General chair of Robotics - Science and Systems (RSS), 2007.
- General chair of the *European Conference on Mobile Robots (ECMR)*, 2007.
- Program chair of Robotics - Science and Systems (RSS), 2006.
- Associate editor of the *IEEE Transactions on Robotics*, 2005-2008.
- Editorial board of the *Journal of Artificial Intelligence Research (JAIR)*, 2003-2006.
- Co-chair of the *IEEE Technical Committee on Networked Robots*, 2003-2007.
- Program co-chair of the *European Conference on Mobile Robots (ECMR)*, 2005.
- Organizer of the *ICRA-2004 Workshop on Networked and Wireless Robots*, 2004.
- Chair of the *European Conference on Mobile Robots (ECMR)*, 2003.
- Organizer of the *IROS-2002 Workshop on Robots in Exhibitions*, 2002.
- Co-chair of the *Third Workshop on Reasoning under Uncertainty in Robotics (RUR)*, 2001.
- Program Co-chair of the *Fourth European Workshop on Advanced Mobile Robots (EUROBOT)*, 2001.
- Guest Editor of *KI* (Special Issue on Mobile Robots).

- Guest editor of *Robotics and Autonomous Systems* (Special Issue on the Third European Workshop on Advanced Mobile Robots).
- Program chair of the *Third European Workshop on Advanced Mobile Robots (EUROBOT)*, 1999.
- Co-chair of the *23rd German Conference of Artificial Intelligence (KI)*, 1999.
- Co-chair of the *Workshop on Adaptive Spatial Representations of Dynamic Environments*, International Joint Conference on Artificial Intelligence (IJCAI), 1999.
- Workshop chair of the *22nd German Conference of Artificial Intelligence (KI)*, 1998.

BOARDS

- Member of the Board of Directors of the *Open Source Robotics Foundation*.
- Conference Board of the International Conference *Robotics 2005, Science and Systems*.
- EURON coordination committee for the key-area dissemination.
- Scientific Advisory Board of *AndroTeC GmbH, Intelligente Automatisierungs- und Robotertechnik*.
- Scientific Advisory Board of *EPainters GmbH*.

MEMBERSHIPS

- Member GI
- Senior Member IEEE
- Life-time member AAAI

TUTORIALS

- Tutorial on probabilistic techniques for robot navigation, Fall School on Human Robot Interaction, Dresden, 2013.
- Tutorial on probabilistic techniques for robot navigation, GI-Conference, Koblenz, 2013.
- Tutorial on probabilistic techniques for robot navigation, Bosch Expert Days, Stuttgart, 2013.
- Tutorial on three-dimensional mapping with mobile robots, SLAM Summer School, Sydney, 2009.
- Tutorial on solving the SLAM problem with Rao-Blackwellized Particle Filters, SLAM Summer School, Oxford, 2006.
- Tutorial on Rao-Blackwellized Particle Filters for Simultaneous Mapping and Localization and Tutorial in Mapping in Dynamic Environments, SLAM Summer School, Toulouse, 2004.
- Tutorial on Probabilistic Robotics, International Spatial Cognition Summer Institute (ISCSI), 2003.
- Tutorial on Probabilistic Robotics, Interdisziplinäres Kolleg (IK), 2003.
- Tutorial on Mapping in Dynamic Environments, SLAM Summer School, Stockholm, 2002.
- Probabilistic Techniques for Mobile Robots at the European Summer School for Mobile Robot Navigation, EPFL, Lausanne, 2001.
- ECAI-Tutorial on Probabilistic Techniques for Mobile Robots, 2002.
- ICRA-Tutorial on Probabilistic Techniques for Mobile Robots, 2001.

- Tutorial on Probabilistic Techniques for Mobile Robots at the European Summer School for Mobile Robot Navigation, EPFL, Lausanne, 2001.

PROGRAM COMMITTEES

- International Conference on Robotics and Automation (ICRA), Best Paper Award Committee, 2011.
- AAAI Conference on Artificial Intelligence, Area Chair, 2010.
- International Conference on Robotics - Science and Systems (RSS), Area Chair, 2005.
- International Conference on Robotics and Automation (ICRA), 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013.
- International Conference on Intelligent Robots and Systems (IROS), 2001, 2002, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013.
- IVAC Symposium on Intelligent Autonomous Vehicles (IAV), 2004.
- Seventh International Symposium Distributed Autonomous Robotic Systems (DARS), 2004.
- International Joint Conference on Artificial Intelligence ((IJCAI), Senior-PC-Member, 2003, 2009.
- Second International Joint Conference on Autonomous Agents and Multi-Agent Systems (AA-MAS), 2003.
- European Conference on Machine Learning (ECML), 2001, 2002.
- European Workshop on Advanced Mobile Robots (EUROBOT), 1999, 2001.
- Symposium for Intelligent Robotics Systems (SIRS), 2000, 2001.
- National Conference on Artificial Intelligence (AAAI), 1998, 1999, 2000, 2002, 2008.
- German Conference on Artificial Intelligence (KI), 1999, 2009.

PHD COMMITTEES

- Oxford University
- University of Oerebroe
- Carnegie Mellon University
- University La Sapienza, Rome
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- University of Zaragoza
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- University of Bonn
- EPFL Lausanne
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- Australian Centre for Field Robotics / University of Sydney
- University of Pisa
- Karlsruhe Institute of Technology