

Curriculum Vitae

Wolfram Burgard

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Work Address:

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Born:

February 8, 1961, in Gelsenkirchen

Research Interests

- 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

- Director of the Department of Computer Science Sept. 2006 - today
University of Freiburg, Department of Computer Science.
- 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 - today
University of Freiburg, Department of Computer Science.
- Representative of the scientific stuff, 1998-1999
University of Bonn, Department of Computer Science.

Awards

- **Best student paper award finalist** of the IEEE International Conference on Robotics & Automation (ICRA), *Supervised learning of places from range data using AdaBoost*, 2005.
- **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 02 best paper** on Mobile Robot Navigation and Perception, *Mapping with mobile Robots in Populated Environments*, 2002.
- **Best paper award** of the IEEE International Conference on Robotics & Automation (ICRA), *A Real-Time Algorithm for Mobile Robot Mapping with Applications to Multi-Robot and 3D Mapping*, 2000.
- **Outstanding paper award** of the National Conference on Artificial Intelligence (AAAI), *The Interactive Museum Tour-guide Robot*, 1998.
- **Outstanding paper award** of the 21st Symposium on Pattern Recognition (DAGM), *Collaborative Multi-Robot Localization*, 1999.
- **Best paper award** of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), *An Experimental Comparison of Localization Methods*, 1998.
- **Best paper award** of the 22nd German Conference on Artificial Intelligence (KI), *GOLEX - Bridging The Gap between Logic (Golog) and a Real Robot*, 1998.
- **Second place award** at the *clean-up an office event* at the AAAI autonomous mobile robot competition, 1994.

- **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.

Other Achievements

- **Distinguished Lecturer** of the IEEE Robotics and Automation Society, 2005-2007.
- **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

- **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 Transegeonal Research Center Spatial Cognition (SFB-TR8). 2003-2010.
- **3D-Map**: Three-Dimensional Map Construction. Project within the Transegeonal Research Center Spatial Cognition (SFB-TR8), 2003-2010.
- **ObjectSpace**: Human and robot navigation in structured environments. Project within the Transegeonal Research Center Spatial Cognition (SFB-TR8), 2007-2010.
- **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.

Publication List

BOOKS / PROCEEDINGS

- [1] W. Burgard, O. Brock, and C. Stachniss, editors. *Proc. of the Robotics - Science and Systems (RSS)*, 2007.

- [2] G. Sukhatme, S. Schaal, D. Fox, and W. Burgard, editors. *Proc. of the Robotics - Science and Systems (RSS)*, 2006.
- [3] S. Thrun, W. Burgard, and D. Fox. *Probabilistic Robotics*. MIT Press, 2005.
- [4] 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.
- [5] A. Borkowski, W. Burgard, and P. Zingaretti, editors. *Proc. of the first European Conference on Mobile Robots (ECMR)*, 2003.
- [6] W. Burgard, U. Nehmzow, S. Vestli, and G. Schweizer, editors. *Proc. of the third European Workshop on Advanced Mobile Robots (EUROBOT)*, 1999.
- [7] W. Burgard, Th. Christaller, and A.B. Cremers, editors. *Proc. of the 22nd German Conference on Artificial Intelligence (KI)*, LNCS. Springer Verlag, 1999.

BOOK CHAPTERS / COLLECTIONS

- [1] O. Martínez-Mozos, C. Stachniss, A. Rottmann, and W. Burgard. *Robotics Research: Results of the 12th International Symposium ISRR.*, volume 28 of *STAR Springer tracts in advanced robotics*, chapter Using AdaBoost for Place Labeling and Topological Map Building, pages 453–472. Springer-Verlag Berlin Heidelberg, Germany, 2007.
- [2] W. Burgard, C. Stachniss, and D. Haehnel. *Autonomous Navigation in Dynamic Environments*, volume 35 of *STAR Springer tracts in advanced robotics*, chapter Mobile Robot Map Learning from Range Data in Dynamic Environments. Springer Verlag, 2007.
- [3] 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.
- [4] 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.E. Pollack, editors, *Advances in Plan-Based Control of Robotic Agents*, volume 2466 of *LNCS*. Springer Verlag, 2002.
- [5] 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.
- [6] 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.
- [7] 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.
- [8] A. Knoll, W. Burgard, and Th. Christaller. Robotik. In G. Görz, C.-R. Rollinger, and J. Schneeberger, editors, *Handbuch der Künstlichen Intelligenz*. Oldenbourg, 2000. In German.
- [9] S. Thrun, A. Bücken, W. Burgard, D. Fox, T. Frölinghaus, D. Hennig, T. Hofmann, M. Krell, and T. Schimdt. Map learning and high-speed navigation in RHINO. In D. Kortenkamp, R.P. Bonasso, and R. Murphy, editors, *Artificial Intelligence and Mobile Robots*. MIT/AAAI Press, Cambridge, MA, 1998.
- [10] W. Burgard. Goal-directed forward chaining: A tuple-oriented bottom-up approach. In Ch. Beierle and L. Plümer, editors, *Logic Programming: Formal Methods and Practical Applications*. Elsevier Science B.V., 1995.

REFEREED JOURNAL/MAGAZINE ARTICLES

- [1] G. Grisetti, G.D. 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.
- [2] 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.
- [3] 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.
- [4] 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.
- [5] 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.
- [6] 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.
- [7] 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.
- [8] C. Stachniss, D. Hähnel, W. Burgard, and G. Grisetti. On actively closing loops in grid-based FastSLAM. *Journal on Advanced Robotics*, 2005.
- [9] W. Burgard, M. Moors, C. Stachniss, and F. Schneider. Coordinated multi-robot exploration. *IEEE Transactions on Robotics*, 21(3):376–378, 2005.
- [10] 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.
- [11] 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.
- [12] S. Thrun, S. Thayer, W. Whittaker, C. Baker, W. Burgard, D. Ferguson, D. Hähnel, M. Montemerlo, A. Morris, Z. Omohundro, C. Reverte, and W. Whittaker. Autonomous exploration and mapping of abandoned mines. *IEEE Robotics & Automation Magazine*, 11(4), 2005.
- [13] M. Bennewitz, W. Burgard, G. Cielniak, and S. Thrun. Learning motion patterns of people for compliant robot motion. *International Journal of Robotics Research (IJRR)*, 25(1), 2005.
- [14] S. Thrun, C. Martin, Y. Liu, D. Hähnel, R. Emery Montemerlo, C. Deepayan, and W. Burgard. A real-time expectation maximization algorithm for acquiring multi-planar maps of indoor environments with mobile robots. *IEEE Transactions on Robotics and Automation*, 20(3):433–442, 2004.
- [15] D. Hähnel, W. Burgard, and S. Thrun. Learning compact 3d models of indoor and outdoor environments with a mobile robot. *Robotics and Autonomous Systems*, 44(1):15–27, 2003.
- [16] D. Hähnel, D. Schulz, and W. Burgard. Mobile robot mapping in populated environments. *Journal of the Robotics Society of Japan (JRSJ)*, 7(17):579–598, 2003.

- [17] W. Burgard, P. Trahanias, D. Hähnel, M. Moors, D. Schulz, H. Baltzakis, and A. Argyros. Telepresence in populated exhibitions through web-operated mobile robots. *Journal of Autonomous Robots*, 15:299–316, 2003.
- [18] D. Schulz, W. Burgard, and A.B. Fox, D. Cremers. People tracking with a mobile robot using sample-based joint probabilistic data association filters. *International Journal of Robotics Research (IJRR)*, 22(2):99–116, 2003.
- [19] M. Bennewitz, W. Burgard, and S. Thrun. Finding and optimizing solvable priority schemes for decoupled path planning techniques for teams of mobile robots. *Robotics and Autonomous Systems*, 41:89–99, 2002.
- [20] D. Schulz and W. Burgard. Probabilistic state estimation of dynamic objects with a moving mobile robot. *Robotics and Autonomous Systems*, 34(2-3):107–115, 2001.
- [21] S. Thrun, D. Fox, W. Burgard, and Dellaert. F. Robust Monte-Carlo localization for mobile robots. *Artificial Intelligence*, 128(1-2):99–141, 2001.
- [22] M. Beetz, T. Arbuckle, Belker T., M. Bennewitz, W. Burgard, A.B. Cremers, D. Fox, H. Grosskreutz, D. Haehnel, and D. Schulz. Integrated plan-based control of autonomous service robots in human environments. *IEEE Intelligent Systems*, 16(5):56–65, 2001.
- [23] D. Schulz, W. Burgard, and A.B. Cremers. State estimation techniques for 3d-visualizations of web-based tele-operated mobile robots. *KI*, 4, 2000.
- [24] D. Fox, W. Burgard, H. Kruppa, and S. Thrun. A probabilistic approach to collaborative multi-robot localization. *Autonomous Robots*, 8(3), 2000.
- [25] S. Thrun, M. Beetz, M. Bennewitz, W. Burgard, A.B. Cremers, F. Dellaert, D. Fox, D. Hähnel, C. Rosenberg, N. Roy, J. Schulte, and Schulz D. Probabilistic algorithms and the interactive museum tour-guide robot Minerva. *Journal of Robotics Research*, 19(11), 2000.
- [26] D. Schulz, W. Burgard, D. Fox, S. Thrun, and A.B. Cremers. Web interfaces for mobile robots in public places. *IEEE-Magazine on Robotics and Automation*, 2000.
- [27] W. Burgard, A.B. Cremers, D. Fox, D. Hähnel, G. Lakemeyer, D. Schulz, W. Steiner, and S. Thrun. Experiences with an interactive museum tour-guide robot. *Artificial Intelligence*, 114(1-2):3–55, 2000.
- [28] D. Fox, W. Burgard, and S. Thrun. Markov localization for mobile robots in dynamic environments. *Journal of Artificial Intelligence Research (JAIR)*, 11:391–427, 1999.
- [29] D. Fox, W. Burgard, and S. Thrun. Active Markov localization for mobile robots. *Robotics and Autonomous Systems*, 25:195–207, 1998.
- [30] M. Beetz, W. Burgard, D. Fox, and A.B. Cremers. Integrating active localization into high-level robot control systems. *Robotics and Autonomous Systems*, 23:205–220, 1998.
- [31] S. Thrun, D. Fox, and W. Burgard. A probabilistic approach to concurrent mapping and localization for mobile robots. *Machine Learning*, 31:29–53, 1998. Also appeared in *Autonomous Robots* 5, pp. 253–271, joint issue.
- [32] D. Fox, W. Burgard, and S. Thrun. The dynamic window approach to collision avoidance. *IEEE Robotics & Automation Magazine*, 4(1), March 1997.
- [33] W. Burgard, A.B. Cremers, D. Fox, D. Hähnel, A.M. Kappel, and S. Lüttringhaus-Kappel. Verbesserte Brandfrüherkennung im Steinkohlenbergbau durch Vorhersage von CO-Konzentrationen. In *KI Themenheft Data Mining*, volume 1. ScienTec Publishing GmbH, 1998. In German.

REFEREED CONFERENCE ARTICLES

- [1] C. Plagemann, F. Endres, J. Hess, C. Stachniss, and W. Burgard. Monocular range sensing: A non-parametric learning approach. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Pasadena, CA, USA, 2008. Accepted for publication.
- [2] J. Sturm, C. Plagemann, and W. Burgard. Unsupervised body scheme learning through self-perception. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Pasadena, CA, USA, 2008. Accepted for publication.
- [3] P. Pfaff, C. Plagemann, and W. Burgard. Gaussian mixture models for probabilistic localization. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Pasadena, CA, USA, 2008. Accepted for publication.
- [4] G. Grisetti, D. Lodi Rizzini, C. Stachniss, E. Olson, and W. Burgard. Online constraint network optimization for efficient maximum likelihood mapping. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Pasadena, CA, USA, 2008. Accepted for publication.
- [5] C. Stachniss, M. Bennewitz, G. Grisetti, S. Behnke, and W. Burgard. How to learn accurate grid maps with a humanoid. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Pasadena, CA, USA, 2008. Accepted for publication.
- [6] B. Frank, M. Becker, C. Stachniss, M. Teschner, and W. Burgard. Efficient path planning for mobile robots in environments with deformable objects. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Pasadena, CA, USA, 2008. Accepted for publication.
- [7] K.O. Arras, S. Grzonka, and W. Burgard. A laser-based multi-hypothesis leg tracker with adaptive occlusion probability for tracking people in real-time. In *Proc. of the IEEE Int. Conf. on Robotics & Automation (ICRA)*, Pasadena, CA, USA, 2008. Accepted for publication.
- [8] B. Steder, G. Grisetti, S. Grzonka, C. Stachniss, A. Rottmann, and W. Burgard. Learning maps in 3d using attitude and noisy vision sensors. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, San Diego, CA, USA, 2007.
- [9] G. Grisetti, S. Grzonka, C. Stachniss, P. Pfaff, and W. Burgard. Efficient estimation of accurate maximum likelihood maps in 3d. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, San Diego, CA, USA, 2007.
- [10] C. Stachniss, G. Grisetti, W. Burgard, and N. Roy. Evaluation of gaussian proposal distributions for mapping with Rao-Blackwellized particle filters. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, San Diego, CA, USA, 2007.
- [11] A. Rottmann, C. Plagemann, P. Hilgers, and W. Burgard. Autonomous blimp control using model-free reinforcement learning in a continuous state and action space. In *Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, San Diego, CA, USA, October 2007.
- [12] P. Pfaff, C. Plagemann, and W. Burgard. Improved likelihood models for probabilistic localization based on range scans. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, San Diego, CA, USA, 2007.
- [13] K. Kersting, C. Plagemann, P. Pfaff, and W. Burgard. Most likely heteroscedastic gaussian process regression. In *International Conference on Machine Learning (ICML)*, Corvallis, Oregon, USA, March 2007.
- [14] G. Grisetti, C. Stachniss, S. Grzonka, and W. Burgard. A tree parameterization for efficiently computing maximum likelihood maps using gradient descent. In *Proc. of Robotics: Science and Systems (RSS)*, Atlanta, GA, USA, 2007.

- [15] T. Lang, C. Plagemann, and W. Burgard. Adaptive non-stationary kernel regression for terrain modeling. In *Robotics: Science and Systems (RSS)*, Atlanta, Georgia, USA, June 2007.
- [16] C. Plagemann, K. Kersting, P. Pfaff, and W. Burgard. Gaussian beam processes: A nonparametric bayesian measurement model for range finders. In *Robotics: Science and Systems (RSS)*, Atlanta, Georgia, USA, June 2007.
- [17] H. Zender, P. Jensfelt, O. Martínez Mozos, G.M. Kruijff, and W. Burgard. An integrated robotic system for spatial understanding and situated interaction in indoor environments. In *Proc. of the Conference on Artificial Intelligence (AAAI)*, Vancouver, British Columbia, Canada, 2007.
- [18] P. Pfaff, R. Triebel, C. Stachniss, P. Lamon, W. Burgard, and R. Siegwart. Towards mapping of cities. In *Proc. of the IEEE International Conference on Robotics & Automation (ICRA)*, Rome, Italy, 2007.
- [19] K.O. Arras, O. Martínez Mozos, and W. Burgard. Using boosted features for the detection of people in 2d range data. In *Proc. IEEE International Conference on Robotics and Automation (ICRA)*, Rome, Italy, 2007.
- [20] C. Plagemann, D. Fox, and W. Burgard. Efficient failure detection on mobile robots using particle filters with gaussian process proposals. In *Proc. of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2007.
- [21] R. Triebel, R. Schmidt, O. Martínez Mozos, and W. Burgard. Instance-based amn classification for improved object recognition in 2d and 3d laser range data. In *Proc. of the Twentieth International Joint Conference on Artificial Intelligence (IJCAI)*, pages 2225–2230, Hyderabad, India, 2007.
- [22] S. Grzonka, C. Plagemann, G. Grisetti, and W. Burgard. Look-ahead proposals for robust grid-based SLAM. In *Proc. of the International Conference on Field and Service Robotics (FSR)*, Chamonix, France, July 2007.
- [23] R. Kümmerle, R. Triebel, P. Pfaff, and W. Burgard. Monte carlo localization in outdoor terrains using multi-level surface maps. In *Proc. of the International Conference on Field and Service Robotics (FSR)*, Chamonix, France, 2007.
- [24] R. Triebel, P. Pfaff, and W. Burgard. Multi-level surface maps for outdoor terrain mapping and loop closing. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2006.
- [25] A. Gil, O. Reinoso, W. Burgard, C. Stachniss, and O. Martínez Mozos. Improving data association in rao-blackwellized visual slam. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2006.
- [26] A. Cocora, K. Kersting, C. Plagemann, W. Burgard, and L. De Raedt. Learning relational navigation policies. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2006.
- [27] M. Mucientes and W. Burgard. Multi-hypothesis tracking of clusters of people. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2006.
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- [29] C. Stachniss, O. Martínez Mozos, and W. Burgard. Speeding-up multi-robot exploration by considering semantic place information. In *Proc. of the IEEE International Conference on Robotics & Automation (ICRA)*, 2006.

- [30] R. Triebel, K. Kersting, and W. Burgard. Robust 3d scan point classification using associative markov networks. In *Proc. of the IEEE International Conference on Robotics & Automation (ICRA)*, 2006.
- [31] C. Plagemann, C. Stachniss, and W. Burgard. Efficient failure detection for mobile robots using mixed-abstraction particle filters. In *European Robotics Symposium (EUROS)*, 2006.
- [32] M. Bennewitz, C. Stachniss, W. Burgard, and S. Behnke. Metric localization with scale-invariant visual features using a single perspective camera. In *European Robotics Symposium (EUROS)*, 2006.
- [33] P. Pfaff, W. Burgard, and D. Fox. Robust monte-carlo localization using adaptive likelihood models. In *European Robotics Symposium (EUROS)*, 2006.
- [34] C. Stachniss, G. Grisetti, and W. Burgard. Information gain-based exploration using rao-blackwellized particle filters. In *Proc. of Robotics: Science and Systems (RSS)*, Cambridge, MA, USA, 2005.
- [35] A. Rottmann, O. Martínez Mozos, C. Stachniss, and W. Burgard. Place classification of indoor environments with mobile robots using boosting. In *Proc. of the National Conference on Artificial Intelligence (AAAI)*, 2005.
- [36] C. Stachniss and W. Burgard. Mobile robot mapping and localization in non-static environments. In *Proc. of the National Conference on Artificial Intelligence (AAAI)*, 2005.
- [37] R. Triebel and W. Burgard. Improving simultaneous localization and mapping in 3d using global constraints. In *Proc. of the National Conference on Artificial Intelligence (AAAI)*, 2005.
- [38] O. Martínez Mozos, C. Stachniss, and W. Burgard. Supervised learning of places from range data using adaboost. In *Proc. of the IEEE International Conference on Robotics & Automation (ICRA)*, 2005.
- [39] C. Stachniss, G. Grisetti, and W. Burgard. Recovering particle diversity in a Rao-Blackwellized particle filter for SLAM after actively closing loops. In *Proc. of the IEEE International Conference on Robotics & Automation (ICRA)*, 2005.
- [40] G. Grisetti, C. Stachniss, and W. Burgard. Improving grid-based SLAM with Rao-Blackwellized particle filters by adaptive proposals and selective resampling. In *Proc. of the IEEE International Conference on Robotics & Automation (ICRA)*, 2005.
- [41] R. Triebel, F. Dellaert, and W. Burgard. Using hierarchical EM to extract planes from 3D range scans. In *Proc. of the IEEE International Conference on Robotics & Automation (ICRA)*, 2005.
- [42] P. Pfaff and W. Burgard. An efficient extension of elevation maps for outdoor terrain mapping. In *Proc. of the Int. Conf. on Field and Service Robotics (FSR)*, 2005.
- [43] M. Veeck and W. Burgard. Learning polyline maps from range scan data acquired with mobile robots. In *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2004.
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Professional Activities

CHAIRMANSHIPS / EDITORIAL BOARDS

- General chair of Robotics - Science and Systems, 2007.
- General chair of the *European Conference on Mobile Robots (ECMR)*, 2007.
- Program chair of Robotics - Science and Systems, 2006.
- Associate editor of the *IEEE Transactions on Robotics*, 2005-today.
- 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

- 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 IEEE
- Member AAAI

TUTORIALS

- 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 - Science and Systems (RSS), Area Chair, 2005.
- International Conference on Robotics and Automation (ICRA), 2005, 2006, 2007.
- International Conference on Intelligent Robots and Systems (IROS), 2001, 2002, 2004, 2005, 2006, 2007.
- 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.
- 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.
- German Conference on Artificial Intelligence (KI), 1999.

PHD COMMITTEES

- Carnegie Mellon University
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