Curriculum Vitae

Personal Data

Name:	Patric Jensfelt	**Phone:**	+46 (0)8 790 67 31
Born:	Stockholm, Sweden, May 1972	**Fax:**	+46 (0)8 723 03 02
Affiliation:	KTH CSC - CAS/CVAP	**E-mail:**	patric@kth.se
	SE-100 44 Stockholm, Sweden	**URL:**	www.cas.kth.se/~ patric

Main Research Interests

Mapping and navigation for mobile robots, human-robot interaction, cognitive systems, and systems integration.

Degrees

MSc in Engineering Physics, KTH 1996
Thesis: "Sensory processing for Control of a Simple Robot Model"
PhD in Automatic Control, Department of Signal, Sensors and Systems, KTH, 2001
Thesis: "Approaches to Mobile Robot Localization in Indoor Environments"
Docent School of Computer Science and Communication, KTH, 2008

Grants

2010 PI in the EU ECHORD project MUCE (300kEuro over 18 months)
2009 co-app in VR DAM (10MSEK over 4 years)
2009 co-app in SSF RoSy (25MSEK over 5 years)
2007 PI in the EU FP7 IP CogX (KTH budget of about 1.1MEuro over 4 years)
2006 PI Swedish Research Council: "Object Based Representations of Space" (2MSEK over 3 years)

Professional Experience

Co-founder of Intelligent Machines Stockholm AB, 2004-
Project leader of industrial project with ABB, 2002-2004
Project leader of industrial project with Stockholm International Fairs, 2002-2003

Editor duties

Editor for Paladyn, Journal of behavioral robotics 2010-

Program Committees etc

Associate Editor for the IEEE RAS Conference Editorial Board
Robotics: Science and Systems (RSS) 2005-
International Conference on Robotics and Automation (ICRA) 2005

Reviewing

IEEE Transactions on Robotics (and Automation)
International Journal of Robotic Research
Robotics and Autonomous Systems
IEEE Pattern Analysis and Machine Intelligence
IEEE Transactions on Systems, Man and cybernetics
Automatica
International Conference on Robotics and Automation (ICRA)
Robotics: Science and Systems (RSS)
Human Robot Interaction Conference (HRI)

Grant proposal expert

Swedish Research Councial, Natural Sciences and Engineering Research, 2010
Academy of Finland, Natural Sciences and Engineering Research, 2010
EURON (European Robotic Network) project proposal

Thesis Examinination, Grading Committee, Opponent

- Javier Civera Sanchez, University of Zaragoza, Spain, Sept 7, 2009, "Real-Time EKF-Based Structure from Motion", (PhD, tribunal member)
- David Törnqvist, Linköpings University, Nov 5, 2008, "Estimation and Detection with Applications to Navigation" (PhD, grading committee)
- Lina Maria Paz Perez, University of Zaragoza, Spain, Nov 4, 2008, "Divide and Conquer: EKF SLAM in O(n)", (PhD, tribunal member)

- Jeroen Hols, Linköpings University, May 30, 2008, "Pose Estimation and Calibration Algorithms for Vision and Inertial Sensors" (opponent Licentiate thesis)
- Christoffer Valgren, Örebro University, Sept 14, 2007, "Topological Mapping and Localization Using Omnidirectional Vision" (opponent, Licentiate thesis)
- Kirill Kouzoubov, The Australian National University, 2006, "Hybrid Topological-Metric Simultaneous Localization and Mapping" (PhD thesis)
- Juan Nieto, The University of Sydney, 2005, "Detailed Environment Representation for the SLAM Problem" (PhD thesis)

Supervision

- Daniel Andersson Tenninge (MSc, from 2010), ”Sliding window robocentric mapping”
- Lukas Gratte (MSc, from 2010), ”Image Recognition using Vocabular Trees”
- Sonia Torres Costa (MSc, from 2009), ”A platform for monitoring and control of audiovisual equipment”
- Sagar Behere (MSc, 2010), ”A Generic Framework for Robot Motion Planning and Control”
- Anders Boberg (MSc, from 2008), “Robocentric visual mapping”
- Görkem Safak (MSc, 2009), ”The Art-Gallery Problem: A Survey and an Extension”
- Meysam Basiri (MSc, 2009), “Distributed Formation Control of Multiple Agents with Angle-Only Constraints”
- Christian Smith (PhD, 2009), ”Input Estimation for Teleoperation”
- Andrzej Pronobis (PhD, from 2009), ”Visual Place Categorization”
- Alper Aydemir (PhD, from 2008), “Qualitative Spatial Modeling”
- Kristoffer Sjö (PhD, from 2007), “Object Based Representations of Space”
- Paul Sundvall (co-sup, Lic 2006), “Detecting and handling errors for mobile robots”
- Alper Aydemir (Msc, 2008), “View planning for object search”
- Dorian Galvéz Lopez (MSc, 2007), “Combining object recognition and metric mapping for spatial modeling with mobile robots”
- Emil Lundström (MSc, from 2006), “Evaluation of Scan Matching Methods”
- Rasmus Ahlberg (MSc, from 2006), “Exploration Strategies for SLAM”
- Federico Bertolli (internship, 2005), “Visual Scan Matching for SLAM”
- Martin Pallin (MSc, from 2005), ”Visual Behaviours for a Field Robot”
- Johan Svahn (MSc 2004) ”Vision Based Autonomous Road Following for a Wheeled Outdoor Robot”
- Elin Anna Topp (MSc, 2003) “Interface for Human Machine Interaction”
- Gunnar Gullstrand (M.Sc. 2003) “Obstacle Avoidance for a Mobile Robot”
- Oliver Wulf (internship 2001) “Automic Recharing System”
- Marco Seiz (M.Sc. 2000) “Active Exploration for Feature Based Global Localization”

- Uwe Schneider (internship 1998) “Interfacing a powered wheelchair”
- Fabrice Pourraz (internship 1997) “Sensors Integration for Grasping”
- Daniel Brolund (MSc, 1997) “Fiberoptic Guided Missiles: A Missile Seeker Model and Methods for Fusing seeker Data in a System with Multiple Missiles”
- Christopho Brun-Franc (MSc, 1997) “Mobile Robot Obstacle Avoidance Using Sonar Sensors”

References

1. Peer reviewed journal articles

[1] J. L. Wyatt, A. Aydemir, M. Brenner, M. Hanheide, N. Hawes, P. Jensfelt, M. Kristan, G.-J. M. Kruijff, P. Lison, A. Pronobis, K. Sjöö, D. S. A. Vrečko, H. Zender, and M. Zillich, "Self-understanding and self-extension: a systems and representational approach," *IEEE Transactions on Autonomous Mental Development*, vol. 2, pp. 282–303, Dec. 2010.

[2] A. N. B. Meysam Basiri and P. Jensfelt, "Distributed control of triangular formations with angle-only constraints," *Systems & Control Letters*, vol. 59, Feb. 2010. ISSN=0167-6911.

[3] C. Smith and P. Jensfelt, "A predictor for operator input for time-delayed teleoperation," *Mechatronics*, vol. In Press, Corrected Proof, pp. –, 2010.

[4] A. Pronobis, O. M. Mozos, B. Caputo, , and P. Jensfelt, "Multi-modal semantic place classification," *The International Journal of Robotics Research (IJRR)*, vol. 29, p. 298-320, Feb. 2010.

[5] A. Pronobis, B. Caputo, P. Jensfelt, and H. I. Christensen, "A realistic benchmark for visual indoor place recognition," *Robotics and Autonomous Systems*, vol. 58, pp. 81–96, Jan. 2010.

[6] K. Sjöö, D. G. López, C. Paul, P. Jensfelt, and D. Kragic, "Object search and localization for an indoor mobile robot," *Journal of Computing and Information Technology*, vol. 17, no. 1, pp. 67–80, 2009. doi:10.2498/cit.1001182.

[7] S. Frintrop and P. Jensfelt, "Attentional landmarks and active gaze control for visual SLAM," *IEEE Transactions on Robotics, special Issue on Visual SLAM*, vol. 24, Oct. 2008.

[8] G. López-Nicolás, C. Sagüés, J. Guerrero, D. Kragic, and P. Jensfelt, "Switching visual control based on epipoles for mobile robots," *Robotics and Autonomous Systems*, vol. 56, pp. 592–603, July 2008.

[9] H. Zender, Óscar Martínez Mozos, P. Jensfelt, G.-J. M. Kruijff, and W. Burgard, "Conceptual spatial representations for indoor mobile robots," *Robotics and Autonomous Systems*, vol. 56, pp. 493–502, June 2008.

[10] J. Folkesson, P. Jensfelt, and H. Christensen, "The m-space feature representation for slam," *IEEE Transactions on Robotics*, vol. 23, pp. 1024–1035, Oct. 2007.

[11] P. Jensfelt, E. Förell, and P. Ljunggren, "Automating the marking process for exhibitions and fairs," *Robotics and Autonomous Magazine*, vol. 14, pp. 35–42, Sept. 2007.

[12] O. M. Mozos, R. Triebel, P. Jensfelt, A. Rottmann, and W. Burgard, "Supervised semantic labeling of places using information extracted from laser and vision sensor data," *Robotics and Autonomous Systems Journal*, vol. 55, pp. 391–402, May 2007.

[13] S. Ekvall, D. Kragic, and P. Jensfelt, "Object detection and mapping for service robot tasks," *Robotica: International Journal of Information, Education and Research in Robotics and Artificial Intelligence*, vol. 25, pp. 175–187, March/April 2007.

[14] G.-J. M. Kruijff, H. Zender, P. Jensfelt, and H. I. Christensen, "Situated dialogue and spatial organization: What, where... and why?," *International Journal of Advanced Robotic Systems, Special Issue on Human and Robot Interactive Communication*, vol. 4, Mar. 2007.

[15] P. Jensfelt, G. Gullstrand, and E. Förell, "A mobile robot system for automatic floor marking," *Journal of Field Robotics*, vol. 23, pp. 441–459, June/July 2006.

[16] P. Jensfelt and S. Kristensen, "Active global localisation for a mobile robot using multiple hypothesis tracking," *IEEE Transactions on Robotics and Automation*, vol. 17, pp. 748–760, Oct. 2001.

[17] P. Jensfelt and H. I. Christensen, "Pose tracking using laser scanning and minimalistic environmental models," *IEEE Transactions on Robotics and Automation*, vol. 17, pp. 138–147, Apr. 2001.

2a. Peer reviewed conference proceedings

[18] A. Aydemir, K. Sjöö, J. Folkesson, and P. Jensfelt, "Search in the real world: Active visual object search based on spatial relations," in *to appear in Proc. of the IEEE International Conference on Robotics and Automation (ICRA'11)*, 2011.

[19] A. N. Bishop and P. Jensfelt, "Global robot localization with random finite set statistics," in *Proc. of 13th International Conference on Information Fusion (FUSION 2010)*, (Edinburgh, UK), July 2010.

[20] A. Pronobis, K. Sjöö, A. N. Aydemir, Alper an d Bishop, and P. Jensfelt, "Representing spatial knowledge in mobile cognitive systems," in *11th International Conference on Intelligent Autonomous Systems (IAS-11)*, (Ottawa, Canada), Aug. 2010.

[21] A. Aydemir, K. Sjöö, and P. Jensfelt, "Object search on a mobile robot using relational spatial information," in *Proc. of the 11th Int Conference on Intelligent Autonomous Systems (IAS-11)*, Aug. 2010.

[22] K. Sjöö, A. Aydemir, and P. Jensfelt, "Mechanical support as a spatial abstraction for mobile robots," in *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'10)*, Oct. 2010.

[23] A. Aydemir, A. N. Bishop, and P. Jensfelt, "Simultaneous object class and pose estimation for mobile robotic applications with minimalistic recognition," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'10)*, May 2010.

[24] A. N. B. Meysam Basiri and P. Jensfelt, "Distributed control of triangular sensor formations with angle-only constraints," in *Proc. of the Fifth International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP 2009)*, (Melbourne, Australia), Dec. 2009.

[25] A. N. Bishop and P. Jensfelt, "An optimality analysis of sensor-target geometries for signal strength based localization," in *Proc. of the Fifth International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP 2009)*, (Melbourne, Australia), Dec. 2009.

[26] A. Boberg, A. N. Bishop, and P. Jensfelt, "Robocentric mapping and localization in modified spherical coordinates with bearing measurements," in *Proc. of the Fifth International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP 2009)*, Dec., (Melbourne, Australia), 2009.

[27] A. Bishop and P. Jensfelt, "Stochastically convergent localization of objects and actively controllable sensor-object pose," in *Proc. of the 10th European Control Conference (ECC 2009)*, 2009.

[28] A. Pronobis, K. Sjöö, A. Aydemir, A. N. Bishop, and P. Jensfelt, "A framework for robust cognitive spatial mapping," in *Proc. of the International Conference on Advanced Robotics (ICAR'09)*, (Munich, Germany), June 2009.

[29] A. Bishop and P. Jensfelt, "A stochastically stable solution to the problem of robocentric mapping," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'09)*, 2009.

[30] M. Egerstedt and P. Jensfelt, "A control theoretic formulation of the generalized slam problem in robotics," in *Proc. of American Control Conference (ACC'08)*, June 2008.

[31] K. Sjöö, C. Paul, and P. Jensfelt, "Object localization using bearing only visual detection," in *Proceedings of the 10th International Conference on Intelligent Autonomous Systems (IAS-10)* (W. e. a. Burgard, ed.), pp. 254–263, IOS Press, July 2008.

[32] S. Frintrop and P. Jensfelt, "Active gaze control for attentional visual SLAM," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'08)*, 2008.

[33] D. G. López, K. Sjö, C. Paul, and P. Jensfelt, "Hybrid laser and vision based object search and localization," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'08)*, 2008.

[34] M. Ullah, A. Pronobis, B. Caputo, P. Jensfelt, and H. Christensen, "Towards robust place recognition for robot localization," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'08)*, 2008.

[35] H. Zender, P. Jensfelt, and G.-J. M. Kruijff, "Human- and situation-aware people following," in *Proc. of the 16th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2007)*, (Jeju Island, Korea), August 2007.

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[45] E. Pacchierotti, H. Christensen, and P. Jensfelt, "Evaluation of passing distance for social robots," in *IEEE Workshop on Robot and Human Interactive Communication (ROMAN)*, (Hartfordshire, UK), Sept. 2006.

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[47] P. Jensfelt, D. Kragic, J. Folkesson, and M. Björkman, "A framework for vision based bearing only 3D SLAM," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'06)*, (Orlando, FL), May 2006.

[48] P. Sundvall and P. Jensfelt, "Fault detection for mobile robots using redundant positioning systems," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'06)*, 2006.

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[52] J. Folkesson, P. Jensfelt, and H. Christensen, "Graphical SLAM using vision and the measurement subspace," in *Proc. of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'05)*, Aug. 2005.

[53] E. Pacchierotti, H. Christensen, and P. Jensfelt, "Embodied social interaction in hallway settings: a user study," in *IEEE Workshop on Robot and Human Interactive Communication (ROMAN)*, (Nashville, TN), pp. 164–171, Aug. 2005.

[54] P. Jensfelt, G. Gullstrand, and E. Förell, "A system for automatic marking of floors in very large spaces," in *Proc. of the International Conference on Field and Service Robotics (FSR'05)*, (July), 2005.

[55] E. Pacchierotti, H. I. Christensen, and P. Jensfelt, "Embodied social interaction for service robots in hallway environments," in *Proc. of the International Conference on Field and Service Robotics (FSR'05)*, July 2005.

[56] J. Folkesson, P. Jensfelt, and H. Christensen, "Vision SLAM in the measurement subspace," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'05)*, (Barcelona, Spain), pp. 30–35, Apr. 2005.

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[64] D. Austin and P. Jensfelt, "Using multiple gaussian hypotheses to represent probability distributions for mobile robot localization," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'00)*, vol. 2, (San Francisco, CA, USA), pp. 1036–1041, May 2000.

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[67] O. Wijk, P. Jensfelt, and H. Christensen, "Triangulation based fusion of ultrasonic sensor data," in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA'98)*, vol. 4, (Leuven, Belgium), pp. 3419–24, IEEE, May 1998.

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4. Patents

[69] E. Förell and P. Jensfelt, WO/2004/107073, "Robot System, Method and Computer Program Product"