

Andrzej Pronobis

✉ pronobis@cs.washington.edu
🌐 www.pronobis.pro

Education

- May 2006 – Dec 2011 **Ph.D. in Computer Vision and Robotics**, *Centre for Autonomous Systems (CAS), KTH Royal Institute of Technology, Stockholm, Sweden.*
- Oct 2000 – Dec 2005 **M.Sc. in Computer Science**, *Silesian University of Technology, Gliwice, Poland.*
5-year full-time studies.
Specialization: System Software
Dissertation: "Indoor Place Recognition Using Support Vector Machines"; Performed at KTH Royal Institute of Technology, Stockholm, Sweden.
Advisors: Dr. Barbara Caputo and Prof. Jacek Łęski
- Jan 2005 – Sep 2005 **Socrates-Erasmus Exchange Programme**, *KTH Royal Institute of Technology, Stockholm, Sweden.*
Studies within the framework of the EU Socrates-Erasmus exchange programme.
M.Sc. thesis project at the Computer Vision and Active Perception Laboratory (CVAP), KTH, Stockholm, Sweden.
- Oct 2002 – Dec 2005 **Parallel Studies in Electronics and Telecommunication**, *Silesian University of Technology, Gliwice, Poland.*
Full-time studies performed in parallel to the main degree.
Specialization: Biomedical Electronics

Doctoral Degree

- Dissertation *Semantic Mapping with Mobile Robots*
- Advisors Prof. Patric Jensfelt, Dr. Barbara Caputo, Prof. Henrik I. Christensen
- Subject Area Semantic Mapping, Visual Place Classification, Active Semantic Perception and Object Search, Spatial Knowledge Representation, Mobile Robot Localization, Cue Integration and Sensor Fusion, Incremental and Online Learning
- Projects Research collaboration and development of several robot demonstrations with multiple partners within the following projects:
- EU FP7 ICT Cognitive Systems Large-Scale Integrated Project "*Cognitive Systems that Self-Understand and Self-Extend (CogX)*",
 - EU FP6 IST Cognitive Systems Integrated Project "*Cognitive Systems for Cognitive Assistants (CoSy)*",
 - EU FP6 IST Integrated Project "*Detection and Identification of Rare Audio-visual Cues (DIRAC)*",
 - Swedish Research Council Project "*Cognitive Multi-sensory Place Exploration (COMPLEX)*".

- Robotic Systems
- Developed spatial understanding systems for the following robots:
 - *Explorer* - a mobile robot able to acquire an understanding of the environment in order to autonomously navigate in it and talk about it.
Developed a vision-based place categorization sub-system for semantic annotation of space.
 - *Dora* - a mobile robot driven by the goal of filling gaps in spatial knowledge.
Developed a spatial knowledge representation for the robot as well as a multi-modal place categorization component and a semantic mapping system. Applied the system in a large-scale object search scenario.

Work Experience

Present Position

Nov 2015 – present **Research Associate**, *Computer Science & Engineering, University of Washington*, Seattle, WA, USA.
 Mar 2013 – Feb 2015

Conducting research on semantic spatial understanding for mobile robots using probabilistic deep learning approaches. Conducting research on language grounding and natural-language human-robot interaction with the help of semantic spatial models. Building an integrated mobile robot system actively gathering information and answering natural language questions about the state of dynamic environments. Advising graduate and undergraduate students.

Previous Positions

Jun 2011 – Feb 2013 **Chief Scientist and Head of Research**, *OculusAI Technologies AB*, Stockholm, Sweden.

Developing machine learning and computer vision algorithms for *Productify* - a cloud-based, mobile application for recognizing and discovering visually similar apparel products. Heading and managing a team of four Ph.D. research scientists and two algorithm developers.

Dec 2011 – Feb 2013 **Postdoctoral Researcher**, *Centre for Autonomous Systems (CAS), KTH Royal Institute of Technology*, Stockholm, Sweden.

Part-time appointment. Designing and teaching a scientific programming course. Advising Ph.D. and M.Sc. students. Conducting research on active perception and 3D data registration.

Mar 2008 – Oct 2008 **Research Assistant**, *The Idiap Research Institute*, Martigny, Switzerland.

Research on on-line learning for multi-modal place classification.

Sep 2005 – Apr 2006 **Research Engineer**, *Centre for Autonomous Systems (CAS), KTH Royal Institute of Technology*, Stockholm, Sweden.

Implementing a visual place recognition system on a mobile robot.

Jul 2004 – Sep 2004 **Software Developer**, *ALSTOM Power Boiler GmbH*, Stuttgart, Germany.

Developing applications in C#, Visual Basic .NET, and Fortran.

Awards and Grants

Sep 2014 Awarded the University of Washington Postdoctoral Research Grant, funding awarded to postdoctoral researchers for conducting independent research with the help of undergraduate students.

Jan 2013 Awarded the Swedish Research Council Project Grant for Junior Researchers, a prestigious, nation-wide grant of 3.5MSEK (400kEUR), with acceptance rate of 2.5%.

- Jan 2013 Awarded the Toyota Research grant for conducting postdoctoral research at the University of Washington.
- May 2012 Finalist for the Best Cognitive Robotics Paper award at IEEE International Conference on Robotics and Automation (ICRA 2012) for the paper "*Large-scale semantic mapping and reasoning with heterogeneous modalities*".
- Jan 2012 Finalist for the EURON 2012 Georges Giralt Ph.D. award for the best European Ph.D. thesis in robotics.
- Apr 2010 Winning research project in the Excitera 2010 Innovation Challenge.
- Mar 2009 First prize in the cognitive mobile robot programming competition organized in conjunction with the CogX Spring School 2009.
- Mar 2008 Awarded the DIRAC (EU FP6 IST Integrated Project) Training Programme grant for a 6 month research visit at the IDIAP Research Institute.
- 2003 – 2005 University Scholarship for Academic Excellence (Electronics and Telecommunication).
- 2001 – 2005 University Scholarship for Academic Excellence (Computer Science).

Editorial Appointments

- Sep 2014 Associate Editor for IEEE International Conference on Robotics and Automation (ICRA)
- Jan 2011 Associate Editor for Paladyn, Journal of Behavioral Robotics.

Teaching Experience

- 2014 – 2017 **Undergraduate Research Project Advisor**, *Robotics and Computer Vision*, University of Washington.
Supervising 14 individual undergraduate research projects in robotics and computer vision.
- 2014 **Course Coordinator, Instructor**, *Robotics Capstone*, University of Washington.
Project course focusing on aspects of multi-floor navigation with a mobile robot using the Robot Operating System (ROS).
- 2012 **Lecturer and Course Coordinator**, *Scientific Programming*, KTH Royal Institute of Technology.
Teaching programming and scientific problem solving using Matlab, C, and C++.
- 2009 – 2012 **Project Advisor**, *Advanced Individual Course in Computer Science*, KTH Royal Institute of Technology.
Supervising several individual student projects in computer science.
- 2010 – 2012 **Teaching Assistant**, *Robotics and Autonomous Systems*, KTH Royal Institute of Technology.
Assisting students during the final project. Designing electronic circuits for the robot platform used in the course.

Supervision

- Ph.D. candidate Michael Jae-Yoon Chung (co-supervisor from Jun 2014)
- Ph.D. candidate Johan Ekekrantz (co-supervisor between Jan 2012 and Mar 2013)
- Ph.D. Nov 2012 Alper Aydemir (co-supervisor from Jul 2011)

- M.Sc. 2013 Andreas Bruse, "*Large-scale Image Datasets for Real-time Semantic Scene Understanding with Mobile Robots*".
- M.Sc. 2013 Nima Behzad, "*Modeling 3D Object Context*".
- M.Sc. 2013 Björgvin Ólafsson, "*Partially Observable Markov Decision Processes for Visual Product Recognition*".
- B.Sc. 2012 Nikolaus Demmel, "*Detecting Novel Concepts in Semantic Mapping with Mobile Robots*".
- M.Sc. 2011 André Susano Pinto, "*Novelty Detection for Semantic Place Categorization*".
- M.Sc. 2010 Li Xing, "*Multi-cue Visual Place Classification for Mobile Robotic Systems*".
- M.Sc. 2007 Muhammad Muneeb Ullah, "*Vision-based Indoor Place Recognition using Local Features*".
- M.Sc. 2007 Jie Luo, "*Incremental Learning for Adaptive Visual Place Recognition in Dynamic Indoor Environments*". Best Master's thesis award of the Swedish AI Society 2007.

Organized Events and Workshops

- Mar 2014 *AAAI Spring Symposium: Qualitative Representations for Robots*
Organized in conjunction with the 2014 AAAI Spring Symposium Series, Palo Alto, CA, USA.
- May 2013 *3rd Workshop on Semantic Perception, Mapping and Exploration (SPME)*
Workshop organized in conjunction with the 2013 IEEE International Conference on Robotics and Automation (ICRA), Karlsruhe, Germany.
- Oct 2012 *2nd IROS Workshop on Active Semantic Perception*
Workshop organized in conjunction with the 2012 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Vilamoura, Portugal.
- May 2012 *2nd ICRA Workshop on Semantic Perception Mapping and Exploration*
Workshop organized in conjunction with the 2012 IEEE International Conference on Robotics and Automation (ICRA), St. Paul, MN, USA.
- Oct 2011 *1st IROS Workshop on Active Semantic Perception*
Workshop organized in conjunction with the 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), San Francisco, CA, USA.
- Oct 2010 *IROS Robot Vision Workshop*
Workshop on the Robot Vision challenge organized in conjunction with the 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Taipei, Taiwan.
- Feb 2010 – Sep 2010 *RobotVision@ImageCLEF'10*
Robot Vision challenge in the ImageCLEF 2010 campaign.
- Nov 2009 – Apr 2010 *ICPR'10 RobotVision Contest*
Robot Vision contest organized as part of the ImageCLEF campaign in conjunction with the 20th International Conference on Pattern Recognition (ICPR), Istanbul, Turkey.
- Feb 2009 – Sep 2009 *RobotVision@ImageCLEF'09*
Robot Vision challenge in the ImageCLEF 2009 campaign.

Training

- Apr 2010 *CogX Spring School 2010*
Planning in the context of artificial cognitive systems.
- Mar 2009 *CogX Spring School 2009*
Integrated architectures for artificial cognitive systems.
- Aug 2007 *Summer Workshop on Multi-Sensory Modalities in Cognitive Science*
Topics in computer vision, speech recognition and autonomous learning.
- Jul 2007 *International Computer Vision Summer School*
Visual recognition, detection, and segmentation in context.
- Sep 2006 *Summer School in Learning for Cognitive Systems*
Developmental psychology and learning in robotics, vision, and language.
- Jul 2005 *CoSy Lite Summer School*
Topics in computer vision, dialogue systems and knowledge representation.

Reviewing

- Robotics: Science and Systems (RSS)
- International Journal of Robotics Research (IJRR)
- Transactions on Robotics (T-RO)
- Robotics and Autonomous Systems (RAS)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Robotics and Automation (ICRA)

Technical Skills

- Programming C, C++, Python, Java, Matlab, JavaScript, Lisp
- Robotic Systems Building integrated robotic systems based on the Robot Operating System (ROS) and the Player/Stage/Gazebo/Morse simulators
- Mobile Development Android: Productify - visual apparel recognition, implementing real-time computer vision algorithms using Android NDK, MyAsana - Asana.com mobile client
- Cloud Computing Amazon Web Services (AWS), Amazon Elastic Compute Cloud (EC2)
- Scientific Software Matlab (Signal Processing, Image Processing and Neural Network Toolboxes), Python (SciPy, NumPy), OpenCV, Point Cloud Library (PCL), Player/Stage, Morse, Robot Operating System (ROS), TensorFlow/Caffe/Shogun/Weka/LibSVM/SVMLight/libDAI machine learning toolkits
- Operating Systems Linux, administration and maintenance of Linux-based servers
- Electronics Digital electronic circuit design (Altium Designer, Xilinx, Eagle) and programming (Assembler and C/C++)

Languages

- English (fluent)
- Polish (native)

Personal Interests

- Alpine climbing, mountaineering, rock climbing
- Winter sports, skiing
- Designing and building robots
- Contributing to open source software projects
- Entrepreneurship
- Classical music
- Traveling

Publications

The publications listed below are available at <http://www.pronobis.pro>.

Peer-reviewed Journal Articles

M. Hanheide, M. Göbelbecker, G. S. Horn, A. Pronobis, K. Sjöo, A. Aydemir, P. Jensfelt, C. Gretton, R. Dearden, M. Janicek, H. Zender, G.-J. Kruijff, N. Hawes, and J. L. Wyatt, "Robot task planning and explanation in open and uncertain worlds," *Artificial Intelligence*, 2016.

J. Martínez-Gómez, B. Caputo, M. Cazorla, H. I. Christensen, M. Fornoni, I. García-Varea, and A. Pronobis, "Where are we after five editions?: Robot vision challenge, a competition that evaluates solutions for the visual place classification problem," *IEEE Robotics & Automation Magazine*, vol. 22, Dec. 2015.

A. Aydemir, A. Pronobis, M. Göbelbecker, and P. Jensfelt, "Active visual object search in unknown environments using uncertain semantics," *IEEE Transactions on Robotics*, vol. 29, Aug. 2013.

A. Pronobis, O. M. Mozos, B. Caputo, and P. Jensfelt, "Multi-modal semantic place classification," *The International Journal of Robotics Research (IJRR), Special Issue on Robotic Vision*, vol. 29, Feb. 2010.

J. L. Wyatt, A. Aydemir, M. Brenner, M. Hanheide, N. Hawes, P. Jensfelt, M. Kristan, G.-J. M. Kruijff, P. Lison, A. Pronobis, K. Sjöo, A. Vrečko, H. Zender, M. Zillich, and D. Skočaj, "Self-understanding & self-extension: a systems and representational approach," *IEEE Transactions on Autonomous Mental Development (TAMD), Special Issue on Representations and Architectures for Cognitive Systems*, vol. 2, Dec. 2010.

A. Pronobis, J. Luo, and B. Caputo, "The more you learn, the less you store: Memory-controlled incremental SVM for visual place recognition," *Image and Vision Computing (IMAVIS), Special Issue on Online Pattern Recognition and Machine Learning Techniques for Computer-Vision: Theory and Applications*, vol. 28, July 2010.

A. Pronobis, B. Caputo, P. Jensfelt, and H. I. Christensen, "A realistic benchmark for visual indoor place recognition," *Robotics and Autonomous Systems (RAS)*, vol. 58, Jan. 2010.

A. Pronobis and B. Caputo, "COLD: COsy Localization Database," *The International Journal of Robotics Research (IJRR)*, vol. 28, May 2009.

Peer-reviewed Conference Contributions

M. J.-Y. Chung*, A. Pronobis*, M. Cakmak, D. Fox, and R. P. N. Rao, "Autonomous question answering with mobile robots in human-populated environments," in *Proceedings of the 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'16)*, (Daejeon, Korea), Oct. 2016.

- M. J.-Y. Chung, A. Pronobis, M. Cakmak, D. Fox, and R. P. N. Rao, "Designing information gathering robots for human-populated environments," in *Proceedings of the 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'15)*, (Hamburg, Germany), Sept. 2015.
- M. J.-Y. Chung, A. Pronobis, M. Cakmak, D. Fox, and R. P. N. Rao, "Exploring the potential of information gathering robots," in *Proceedings of the 10th Annual ACM/IEEE International Conference on Human-Robot Interaction Extended Abstracts (HRI'15)*, (Portland, OR, USA), Mar. 2015.
- J. Ekekrantz, A. Pronobis, J. Folkesson, and P. Jensfelt, "Adaptive iterative closest keypoint," in *Proceedings of the 6th European Conference on Mobile Robots (ECMR'13)*, (Barcelona, Spain), Sept. 2013.
- A. Pronobis and P. Jensfelt, "Large-scale semantic mapping and reasoning with heterogeneous modalities," in *Proceedings of the 2012 IEEE International Conference on Robotics and Automation (ICRA'12)*, (Saint Paul, MN, USA), May 2012.
- M. Göbelbecker, M. Hanheide, C. Gretton, N. Hawes, A. Pronobis, A. Aydemir, S. Kristoffer, and H. Zender, "Dora: A robot that plans and acts under uncertainty," in *35th German Conference on Artificial Intelligence (KI'12)*, (Saarbrücken, Germany), Sept. 2012.
- A. Pronobis and P. Jensfelt, "Hierarchical multi-modal place categorization," in *Proceedings of the 5th European Conference on Mobile Robots (ECMR'11)*, (Örebro, Sweden), Sept. 2011.
- A. Aydemir, M. Göbelbecker, A. Pronobis, K. Sjöö, and P. Jensfelt, "Plan-based object search and exploration using semantic spatial knowledge in the real world," in *Proceedings of the 5th European Conference on Mobile Robots (ECMR'11)*, (Örebro, Sweden), Sept. 2011.
- M. Hanheide, C. Gretton, R. W. Dearden, N. A. Hawes, J. L. Wyatt, A. Pronobis, A. Aydemir, M. Göbelbecker, and H. Zender, "Exploiting probabilistic knowledge under uncertain sensing for efficient robot behaviour," in *Proceedings of the 22nd International Joint Conference on Artificial Intelligence (IJCAI'11)*, (Barcelona, Spain), July 2011.
- K. Sjöö, A. Pronobis, and P. Jensfelt, "Functional topological relations for qualitative spatial representation," in *Proceedings of the 15th International Conference on Advanced Robotics (ICAR'11)*, (Tallinn, Estonia), June 2011.
- A. Aydemir, K. Sjöö, J. Folkesson, A. Pronobis, and P. Jensfelt, "Search in the real world: Active visual object search based on spatial relations," in *Proceedings of the 2011 IEEE International Conference on Robotics and Automation (ICRA'11)*, (Shanghai, China), May 2011.
- A. Susano Pinto, A. Pronobis, and L. Paulo Reis, "Novelty detection using graphical models for semantic room classification," in *Progress in Artificial Intelligence, 15th Portuguese Conference on Artificial Intelligence (EPIA'11), Lisbon, Portugal* (L. Antunes and H. S. Pinto, eds.), vol. 7026 of *Lecture Notes in Computer Science*, Springer, Oct. 2011.
- A. Pronobis, K. Sjöö, A. Aydemir, A. N. 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.
- A. Pronobis, K. Sjöö, A. Aydemir, A. N. Bishop, and P. Jensfelt, "A framework for robust cognitive spatial mapping," in *Proceedings of the 14th International Conference on Advanced Robotics (ICAR'09)*, (Munich, Germany), June 2009.
- A. Pronobis, O. M. Mozos, and B. Caputo, "SVM-based discriminative accumulation scheme for place recognition," in *Proceedings of the 2008 IEEE International Conference on Robotics and Automation (ICRA'08)*, (Pasadena, CA, USA), May 2008.

M. M. Ullah, A. Pronobis, B. Caputo, J. Luo, P. Jensfelt, and H. I. Christensen, "Towards robust place recognition for robot localization," in *Proceedings of the 2008 IEEE International Conference on Robotics and Automation (ICRA'08)*, (Pasadena, CA, USA), May 2008.

H. Maboudi Afkham, A. Tavakoli Targhi, J.-O. Eklundh, and A. Pronobis, "Joint visual vocabulary for animal classification," in *Proceedings of the 2008 19th International Conference on Pattern Recognition (ICPR'08)*, (Tampa, FL, USA), Dec. 2008.

A. Pronobis and B. Caputo, "Confidence-based cue integration for visual place recognition," in *Proceedings of the 2007 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'07)*, (San Diego, CA, USA), Oct. 2007.

J. Luo, A. Pronobis, B. Caputo, and P. Jensfelt, "Incremental learning for place recognition in dynamic environments," in *Proceedings of the 2007 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'07)*, (San Diego, CA, USA), Oct. 2007.

J. Luo, A. Pronobis, and B. Caputo, "SVM-based transfer of visual knowledge across robotic platforms," in *Proceedings of the 5th International Conference on Computer Vision Systems (ICVS'07)*, (Bielefeld, Germany), Mar. 2007.

A. Pronobis, B. Caputo, P. Jensfelt, and H. I. Christensen, "A discriminative approach to robust visual place recognition," in *Proceedings of the 2006 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'06)*, (Beijing, China), Oct. 2006.

Peer-reviewed Workshop Contributions

J. Ekekrantz, A. Pronobis, J. Folkesson, and P. Jensfelt, "Enabling efficient registration using adaptive iterative closest keypoint," in *IROS 2013 Workshop on Planning, Perception and Navigation for Intelligent Vehicles*, (Tokyo, Japan), Nov. 2013.

C. Matuszek*, A. Pronobis*, L. Zettlemoyer, and D. Fox, "Combining world and interaction models for human-robot collaborations," in *AAAI 2013 Workshop on Intelligent Robotic Systems*, (Bellevue, WA, USA), July 2013.

G. Manno, A. Pronobis, and B. Rasolzadeh, "Productify - Product recognition in the wild," in *CVPR 2012 IEEE Vision Industry and Entrepreneur Workshop (VIEW)*, (Providence, Rhode Island, USA), June 2012.

A. Pronobis and P. Jensfelt, "Multi-modal semantic mapping," in *RSS 2011 Workshop on Grounding Human-Robot Dialog for Spatial Tasks*, (Los Angeles, CA, USA), July 2011.

A. Aydemir, A. Pronobis, K. Sjöo, M. Göbelbecker, and P. Jensfelt, "Object search guided by semantic spatial knowledge," in *RSS 2011 Workshop on Grounding Human-Robot Dialog for Spatial Tasks*, (Los Angeles, CA, USA), July 2011.

M. Göbelbecker, A. Aydemir, A. Pronobis, K. Sjöo, and P. Jensfelt, "A planning approach to active visual search in large environments," in *AAAI 2011 Workshop on Automated Action Planning for Autonomous Mobile Robots (PAMR)*, (San Francisco, CA, USA), Aug. 2011.

A. Pronobis, M. Fornoni, H. I. Christensen, and B. Caputo, "The Robot Vision track at ImageCLEF 2010," in *Working Notes for the CLEF 2010 Workshop*, (Padua, Italy), 2010.

A. Pronobis, K. Sjöo, A. Aydemir, A. N. Bishop, and P. Jensfelt, "A framework for robust cognitive spatial mapping," in *2009 Swedish Workshop on Autonomous Robots (SWAR'09)*, (Västerås, Sweden), Sept. 2009.

B. Caputo, A. Pronobis, and P. Jensfelt, "Overview of the CLEF 2009 Robot Vision track," in *Working Notes for the CLEF 2009 Workshop*, (Corfu, Greece), 2009.

A. Pronobis and B. Caputo, "The more you learn, the less you store: Memory-controlled incremental SVM," in *ECCV 2006 2nd International Cognitive Vision Workshop (ICVW)*, (Graz, Austria), May 2006.

Book Chapters

- A. Pronobis, P. Jensfelt, K. Sjöo, H. Zender, G.-J. M. Kruijff, O. M. Mozos, and W. Burgard, "Semantic modelling of space," in *Cognitive Systems* (H. I. Christensen, G.-J. M. Kruijff, and J. L. Wyatt, eds.), vol. 8 of *Cognitive Systems Monographs*, Springer Berlin Heidelberg, 2010.
- K. Sjöo, H. Zender, P. Jensfelt, G.-J. M. Kruijff, A. Pronobis, N. Hawes, and M. Brenner, "The explorer system," in *Cognitive Systems* (H. I. Christensen, G.-J. M. Kruijff, and J. L. Wyatt, eds.), vol. 8 of *Cognitive Systems Monographs*, Springer Berlin Heidelberg, 2010.
- L. Xing and A. Pronobis, "Multi-cue discriminative place recognition," in *Multilingual Information Access Evaluation Vol. II Multimedia Experiments* (C. Peters, B. Caputo, J. Gonzalo, G. J. F. Jones, J. Kalpathy-Cramer, H. Müller, and T. Tsirikla, eds.), vol. 6242 of *Lecture Notes in Computer Science*, Springer, 2010.
- A. Pronobis, H. I. Christensen, and B. Caputo, "Overview of the ImageCLEF@ICPR 2010 Robot Vision track," in *Recognizing Patterns in Signals, Speech, Images and Videos* (D. Ünay, Z. Çataltepe, and S. Aksoy, eds.), vol. 6388 of *Lecture Notes in Computer Science*, Springer Berlin / Heidelberg, 2010.
- A. Pronobis and B. Caputo, "The Robot Vision task," in *ImageCLEF* (H. Müller, P. Clough, T. Deselaers, and B. Caputo, eds.), vol. 32 of *The Information Retrieval Series*, Springer Berlin Heidelberg, 2010.
- A. Pronobis, L. Xing, and B. Caputo, "Overview of the CLEF 2009 Robot Vision track," in *Multilingual Information Access Evaluation Vol. II Multimedia Experiments* (C. Peters, B. Caputo, J. Gonzalo, G. J. F. Jones, J. Kalpathy-Cramer, H. Müller, and T. Tsirikla, eds.), vol. 6242 of *Lecture Notes in Computer Science*, Springer, 2010.

Theses

- A. Pronobis, *Semantic Mapping with Mobile Robots*. PhD thesis, KTH Royal Institute of Technology, Stockholm, Sweden, June 2011.
- A. Pronobis, "Indoor place recognition using Support Vector Machines," Master's thesis, KTH Royal Institute of Technology, Stockholm, Sweden, Dec. 2005.

Computer Programs and Datasets

Semantics-Aware Robotic Assistant (SARA) - Large, integrated mobile robot system based on the Robot Operating System (ROS) (under development).

Semantic Annotation of Space - Complete semantic space annotation system based on multi-modal sensory data obtained from visual and laser range sensors. Website: <http://www.pronobis.pro/software/semantic-annotation-demo>

ROCS - Software toolkit for semantic spatial understanding.

MyAsana - Asana.com mobile client for Android. Website: <http://www.myasana.org>

libCRFH - Library for extracting Composed Receptive Field Histogram image descriptors. Website: <http://www.pronobis.pro/software/libcrfh>

Armaria - Personal database of scientific publications. Website: <http://sourceforge.net/projects/armaria>

INDECS Dataset - Website: <http://www.cas.kth.se/INDECS>

IDOL Dataset - Website: <http://www.cas.kth.se/IDOL>

COLD Dataset - Website: <http://www.cas.kth.se/COLD>

COLD-Stockholm Dataset - Website: <http://www.pronobis.pro/data/cold-stockholm>