PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF HELSINKI, FINLAND
EMAIL: Petri.Myllymaki@cs.helsinki.fi • URL: http://www.cs.helsinki.fi/Petri.Myllymaki/

PETRI MYLLYMÄKI, PH.D., DOCENT OF COMPUTER SCIENCE
COMPLEX SYSTEMS COMPUTATION GROUP
HELSINKI INSTITUTE FOR INFORMATION TECHNOLOGY HIIT
UNIVERSITY OF HELSINKI & AALTO UNIVERSITY
FINLAND

CURRICULUM VITAE

Full name	Petri Jukka Myllymäki
Date and place of birth	7 February 1962, Mikkeli, Finland
Current employer	University of Helsinki, Department of Computer Science
Current position	***Professor*** (since August 2003), Head of Intelligent Systems at the Department of Computer Science, University of Helsinki ***Programme Director***, Helsinki Institute for Information Technology HIIT

Education and training.

1999 Docent of Computer Science (University of Helsinki)

1995 Doctor of Philosophy (Dept. of Computer Science, Univ. of Helsinki). Title of the Ph.D. thesis: *Mapping Bayesian Networks to Stochastic Neural Networks: A Foundation for Hybrid Bayesian-Neural Systems*.

1994 Licentiate in Philosophy (Dept.of Computer Science, Univ. of Helsinki). Title of the Ph.Lic. thesis: *Bayesian Reasoning by Stochastic Neural Networks*.

1991 Master of Science (Dept.of Computer Science, Univ. of Helsinki). Title of the M.Sc. thesis: *Teaching Multilayer Neural Networks with Optimized Backpropagation of Errors* (in Finnish).

1981 Matriculation examination (Mukkulan lukio, Lahti)

Previous professional appointments.

08/1999-07/2003: Academy Research Fellow, Academy of Finland; 08/1998-07/1999: Postdoctoral Researcher, Academy of Finland; 08/1997-12/1997; Research Scientist, University of Helsinki; 01/1997-12/2001: Assistant Professor, University of Helsinki; 08/1996-07/1997: Research Scientist, Academy of Finland; 08/1995-07/1996: Research Scientist, University of Helsinki; 03/1995-08/1995: Academic Visitor, University of London; 08/1992-02/1995: Research Scientist, University of Helsinki; 01/1992-07/1992: Assistant, University of Helsinki; 03/1991-12/1991: Research Assistant, University of Helsinki; 09/1988-02/1991: Research Scientist, University of Helsinki; 10/1987-08/1988: Research Assistant, University of Helsinki

Positions of trust.

Journal of Artificial Intelligence Research, member of the editorial board (2010-); Statistics and Computing, member of the editorial board (2010-); Pascal Network of Excellence, member of the steering committee (2003-2012); The EURASIP Journal on Bioinformatics and Systems Biology: member of the guest editorial board for a special issue on Information-Theoretic Methods for Bioinformatics (2006-2007); ENTROPY, An International Journal of Entropy and Information Studies: member of the editorial board (1998-2006); Helsinki Institute for Information Technology: member of the board of directors (2002-2006), programme director, member of the steering group (2006-); Helsinki Graduate School in Computer Science and Engineering: member of the board of directors (2004-), member of the management group, co-head of the Pattern Analysis and Intelligent Systems thematic area, (2006-); Department of Computer Science, University of Helsinki: member of the steering committee (2007-); Kumpula science library: member of the steering committee (2007-2010); Ekahau Inc.: chairman of the board of directors (2000-2004); Bayes Information Technology Inc.: member of the board of directors (2000-2003), Cloud'N'Sci Inc., member of the board of directors (2010-).

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Conference organization activities. Program and Conference Chair, Probabilistic Graphical Models (PGM'2010); Program Chair, Uncertainty in Artificial Intelligence (UAI'2008); Technical Co-Chair, Workshop on Information Theoretic Methods in Science and Engineering (WITMSE'2008, WITMSE'2009, WITMSE'2010); Programme Co-Chair, 2008 Workshop on Recent Breakthroughs in MDL Learning; Area Chair, European Conference on Artificial Intelligence (ECAI'08); Organizing Chair, International Workshop on Intelligent Information Access (IIIA-2006)

Program committee memberships. International Joint Conference on Artificial Intelligence (IJCAI-2009), Workshop on Mobile User Improved Interaction (MUI2-2007), IJCAI Workshop on Cross-Lingual Information Access (CLIA-2007, CLIA-2008), International Workshop on Intelligent Information Access (IIIA-2006), Uncertainty in Artificial Intelligence (UAI'03, UAI'04, UAI'06, UAI'07), Artificial Intelligence and Statistics (AISTATS'05, AISTATS'07), International and Interdisciplinary Conference on Adaptive Knowledge Representation and Reasoning (AKRR'05), NIPS 2005 Workshop on Machine Learning for Implicit Feedback and User Modeling, International Conference on Applied Artificial Intelligence (ICAAI'2003), International Conference on Machine Learning (ICML'01), International Conference on Case-Based Reasoning (ICCBR'01), The International FLAIRS Conference, special track on uncertain reasoning (FLAIRS'98, FLAIRS'99, FLAIRS'00), Second Nordic Workshop on Genetic Algorithms and Their Applications (NWGA'96).

Referee for professional journals. IEEE Transactions on Information Theory, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, Statistics and Computing, Journal of the Royal Statistical Society, Journal of Machine Learning Research, Wireless Communications and Mobile Computing, Data Mining and Knowledge Discovery, Machine Learning, International Statistical Review, Applied Artificial Intelligence, Knowledge Engineering Review, International Journal on Very Large Data Bases, Canadian Journal of Fisheries and Aquatic Sciences, Acta Informatica, International Journal of Neural Systems, Nordic Journal of Computing.

Referee for professional conferences. IEEE International Symposium on Information Theory (ISIT), IEEE Information Theory Workshop (ITW), International Conference on Case-Based Reasoning (ICCBR), European Conference on Computational Learning Theory (EuroCOLT), European Conference on Artificial Intelligence (ECAI), European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD), European Conference on Case-Based Reasoning (ECCBR), European Workshop on Case-Based Reasoning (EWCBR), Scandinavian Conference on Artificial Intelligence (SCAI), International Conference on Applications and Theory of Petri Nets.

Opponent or external referee for academic dissertations. Simo Ali-Löytty (Gaussian Mixture Filters in Hybrid Positioning". Ph.D. thesis, Tampere University of Technology, 2009), Seow Chee Kiat (Localization in multipath environments. Ph.D. thesis, Nanyang Technological University, Singapore, 2008), Jarkko Salojärvi (Inferring Relevance from Eye Movements with Wrong Models. Ph.D. thesis, Helsinki University of Technology, 2008), Tapani Raiko (Bayesian Inference in Nonlinear and Relational Latent Variable Models. Ph.D. thesis, Helsinki University of Technology, 2006), Jarmo Kukkonen (An Evaluation of Effectiveness of Public Health Services on the Basis of Routinely Collected Data. Ph.D. thesis, Kuopio University. Kuopio University Publications D. Medical Sciences 355, 2005), Juha-Pekka Koskinen (Estimation of Paper Machine Spare Part Maintenance Life Cycles from Customer Orders. Licentiate thesis, Tampere University of Technology, 2004).. Mikko Koivisto (Sum-Product Algorithms for Analysis of Genetic Risks. Ph.D. thesis, University of Helsinki, 2003), Janne Sinkkonen (Learning Metrics and Discriminative Clustering. Ph.D. thesis, Helsinki University of Technology, 2003), Jesus Cerquides (Improving Bayesian Classifiers. Ph.D. thesis, Technical University of Catalonia, Spain, 2003), Anssi Lensu (Computationally Intelligent Methods for Qualitative Data Analysis.

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Ph.D. thesis, University of Jyväskylä, 2002.), Harri Valpola (Bayesian Ensemble Learning for Nonlinear Factor Analysis. Ph.D. thesis, Helsinki University of Technology, 2001.), Sami Saalasti (Time Series Prediction and Analysis with Neural Networks. Licentiate thesis, University of Jyväskylä, 2001).

Research awards and major stipendiary support for research. The IADIS International Conference on Intelligent Systems and Agents (2007, outstanding paper award), The 17th Belgian-Dutch Conference on Artificial Intelligence (2005, best paper award), Jenny and Antti Wihuri foundation (1993, 5 000 EUR for Ph.D. work and an academic visit abroad), Leo and Regina Wainstein foundation, (1993, 5 000 EUR for Ph.D. work and an academic visit abroad,), Heikki and Hilma Honkanen foundation (1992, 10 000 EUR for Ph.Lic. work).

Consultancies. Petri Myllymäki has extensive experience of cooperation with international industry. The companies involved in his consulting activities include include M-Brain (analysis of news streams), Kibron (applied intelligent methods in bioinformatics), Almamedia (analysis of web log data), ABB (hybrid probabilistic models in configuration of synchronous machines), Kone Corporation (Bayesian modeling in elevator technology), Nokia (stochastic optimization in telecommunication applications), StoraENSO (optimization in logistics problems), Space Systems Finland/European Space Agency (intelligent fault diagnosis systems for autonomous space satellites), BayesIT (visualization of multidimensional data) and Ekahau (machine learning techniques for analysis of wireless data). In the public sector Dr. Myllymäki has worked as a consultant for Helsinki University Central Hospital (analysis of cardiological data), VTT Biotechnology (analysis of bakery process data), Department of Health Policy and Management of University of Kuopio (analysis of medical treatment effectiveness data), the Finnish Police Department (analysis of crime data) and the Finnish Association on Intellectual and Developmental Disabilities (search engines for people with linguistic disabilities). He has also worked as a scientific reviewer and expert evaluator for the European Commission in the Sixth Framework Research Programme, INRIA France, The Netherlands Organization for Scientific Research (NWO), Austrian Science Fund (FWF), National ICT Australia (NICTA), University of Waikato, New Zealand, The Hong Kong University of Science and Technology, University of Southampton, UK, Helsinki University of Technology, Helsinki Graduate School in Computer Science and Engineering, The Finnish Work Environment Fund and the Academy of Finland.

Patents. Location estimation in wireless telecommunication networks (US2004072577-2004-04-15); Visualization method and visualization system (US6873325-2005-03-29); Error estimate concerning a target device's location operable to move in a wireless environment (US2005131635-2005-06-16); Sequence-based positioning technique (US2005136944 -2005-06-23); Probabilistic model for a positioning technique (US2007117568-2007-0-24)

Tutorials and invited talks. *Towards Objective Learning of Bayesian Networks,* Invited talk at the First International Workshop on Advanced Methodologies for Bayesian Network (Tokyo, Japan, November 2010); *MDL Interval Estimation*, invited talk at the 2010 Information Theory and Applications Workshop, San Diego, February 2010 (together with Jorma Rissanen); Experiences *on Innovation Trails* (Kokemuksia innovaatiopoluista). Invited talk at a Brainstorming Seminar on Innovations, Paris, France, 21.-24.1.2009; *Personalized Ubiservices in Public Spaces*. Invited talk at Tronshow 2009, Tokio, Japan, 11.12.2008. *Scientific research as incubator for software innovations* (Tieteellinen huippututkimus ohjelmistoalan innovaatioiden synnyttäjänä). Invited talk at the annual boat seminar of Sytyke ry (Finnish association for people working in system design), Helsinki/Stocholm, 10.-12.09.2008.; *Recent advances in computing the NML for discrete Bayesian networks*. Invited talk at the 2008 Workshop on Information Theoretic Methods in Science and Engineering, Tampere, Finland. August 18-20, 2008; *Fast computation of NML for Bayesian networks*. Invited talk at the ICML/UAI/COLT workshop on Recent Breakthroughs in Minimum Description Length Learning, Helsinki, Finland, July 9, 2008; *Towards Intelligent Information Access*. Invited talk at the seminar “Viisautta tiedosta”, organized by M-Brain Inc. on May 15, 2008; Tulevaisuuden tiedonhaun mahdollisuudet. Kutsuesitelmä, Kehitysvammaliitto 22.01.2008; *The Future of Search*, invited

talk at the Information Days 2007 Congress and Exhibition (Helsinki, October 18, 2007); *Intelligent Information Access*, invited talk at the seminar on the technologies of the future, organized by the Finnish Defence Forces, (Helsinki 3.5.2006); *B-course: a web-based tool for Bayesian and causal data analysis*. Invited talk at the Finnish Mathematical Days 2006 (Tampere, January 2006); Probabilistic *Modeling with Bayesian Networks*. Half day tutorial at the HECSE Winter School 1997 (Helsinki, January 1997), two day tutorial at the,CIDEC Winter School "Trends in Computer Science and Information Technology" (Palmse, Estonia 1997), one-day tutorial at the 7th Finnish Artificial Intelligence Conference (Vaasa 1996.); *On Probabilistic Modeling and Bayesian Networks*, series of invited talks at the BayMiner™ user seminars (Helsinki, 05.09.02, 16.01.03, 30.10.03, 13.11.03, 11.03.04, 17.02.05, 19.05.05).

Externally funded research projects. Petri Myllymäki has been the responsible leader of the following research projects funded by the Academy of Finland, EU, public organizations, The Finnish Funding Agency for Technology and Innovation (Tekes), or the industry directly, with total funding exceeding 5 million euros: Tools for Virtual Collaborative Innovation (VISCI TOOLS) (together with Dr. Patrik Floréen), 2010-2011 / Tekes; Science Workshop Series on Stemmatology (together with Prof. Tuomas Heikkilä and Dr. Teemu Roos), 2009-201 / The Finnish Cultural Foundation; Adaptive Interfaces for Consumer Applications (AICA), 2009-2011 /Tekes; Virtual Intelligent Space for Collaborative Innovation (VISCI), 2009-2012 / Academy of Finland; Applications of the MDL Principle to Prediction and Model Selection and Testing (ModeST), 2009-2012 / Academy of Finland; Erityisryhmille soveltuva suomenkielinen hakukone (SelkoHaku), 2008-2009 / The Finnish Association on Intellectual and Developmental Disabilities; Personalised Ubiservices in Public Spaces (PUPS) (together with Patrik Floréen), 2007-2009 / Tekes; Cognitive-Level Annotation using Latent Statistical Structures (CLASS), 2006-2008 / EU; Cognitively Inspired Visual Interfaces for Representing Multidimensional Information (CIVI), 2005-2008 / Academy of Finland; SensorPlanet, 2007 (Nokia); MDL-Based Methods for Denoising Image Signals (KUKOT), 2006-2007 /Tekes (a national consortium with 2 partners, Dr. Myllymäki as the coordinator); Probabilistic Methods for Microarray Data (PMMA), 2004-2007 / Tekes; Scalable Probabilistic Methods for the Next Generation Search Engine (Prose), 2003-2006 / Academy of Finland; Superpeer Semantic Search Engine (Alvis), 2004-2006 / EU (an EU STREP with 11 partners, Dr. Myllymäki as the coordinator); Search-in-a-box (SIB), 2004-2006 / Tekes, Almamedia, Nokia, M-Brain, Finnish Patent Office (a national consortium with 3 academic partners, Dr. Myllymäki as the coordinator); Normalized Compression Distance Measures and Their Applications in Unsupervised and Supervised Analysis of Polymorphic Data, 2004-2005 / EU (Pascal NoE); Proactive Information Retrieval by Adaptive Models of Users' Attention and Interests (Prima), 2003-2005, Academy of Finland; Computationally Efficient Probabilistic Learning and Reasoning (Cepler), 2002-2004 / Academy of Finland; Personalized Location-Dependent Services in Wireless Networks (Wirne), 2003-2004, Ekahau Inc.

Teaching. Petri Myllymäki has supervised the following doctoral dissertations: Petri Kontkanen (2009): Computationally Efficient Methods for MDL-Optimal Density Estimation and Data Clustering; Tommi Mononen (2009): Computing the Stochastic Complexity of Simple Probabilistic Graphical Models; Tomi Silander (2009), The Most Probable Bayesian Network and Beyond; Teemu Roos (2007): Statistical and Information-Theoretic Methods for Data Analysis. Since August 2003 Dr. Myllymäki has worked as a professor of the Department of Computer Science of University of Helsinki leading the Intelligent Systems specialization area. He is responsible for the supervision of all M.Sc. and Ph.D. students in this area, and for planning and organizing the curriculum for Intelligent Systems. He has supervised over 40 M.Sc. students. Of the Ph.D. students supervised by Prof. Myllymäki, Teemu Roos received the best young research award of Department of Computer Science in 2007 and the best senior researcher award in 2009, was selected in 2008 on the Classification Society Distinguished Dissertation Award Shortlist, and was awarded in 2009 the Cor Baayen Award given by the European Research Consortium for Informatics and Mathematics to the most promising young researcher in Europe. Ville Tuulos, was in 2008 granted the best M.Sc. thesis of the year award by the Finnish Association for Mathematicians, Physicists and Computer Scientists