

DIRECTOR, HELSINKI INSTITUTE FOR INFORMATION TECHNOLOGY, FINLAND  
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## CURRICULUM VITAE

**Full name:** Petri Jukka Myllymäki

**Date and place of birth:** 7 February 1962, Mikkeli, Finland

**Current positions:**

- **Director**, Helsinki Institute for Information Technology (HIIT), 2015-2020
- **Director**, Helsinki Doctoral Programme in Computer Science (DoCS), 2013-
- **Director**, Helsinki Doctoral Education Network in ICT (HICT), 2013-
- **PI**, the Finnish Center of Excellence in Computational Inference Research (COIN), 2012-2017
- **Academic Coordinator**, the Data to Intelligence (D2I) national research programme, part of the Strategic Centres for Science, Technology and Innovation (2012-2016)
- **Professor** (tenured), Department of Computer Science, University of Helsinki, Finland, 2003-



**Education**

- 1999 Docent of Computer Science (University of Helsinki)
- 1995 Doctor of Philosophy (Dept. of Computer Science, Univ. of Helsinki).
- 1994 Licentiate in Philosophy (Dept. of Computer Science, Univ. of Helsinki).
- 1991 Master of Science (Dept. of Computer Science, Univ. of Helsinki).
- 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.** Collaboration Forum for Scientific Computing (Ministry of Education): chair (2016-); National Committee for Research Data Management: member (2015-); NSF Science and Technology Center for Science of Information: coordinator of collaboration activities (2014-); The Finnish Academy of Technology: member (2013-); Helsinki Institute for Information Technology: member of the board of directors, representative of the staff (2002-2006), Programme Director, member of the steering group (2006-2015), Director, chair of the steering group (2015-); University of Helsinki, Faculty of Science: member of the Faculty Council (2014-); University of Helsinki, Doctoral School in Natural Sciences: member of the steering committee (2013-), Doctoral Programme in Computer Science, Director, chair of the steering group (2013-); University of Helsinki & Aalto University: Helsinki Doctoral Education Network in ICT, Director, chair of the steering group (2013-); Pascal EU Network of Excellence, member of the steering committee (2003-2013); Journal of Artificial Intelligence Research, member of the editorial board (2010-2013); Statistics and Computing, member of the editorial board (2010-2013); ENTROPY, An International Journal of Entropy and Information Studies: member of the editorial board (1998-2006); 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); Department of Computer Science, University of Helsinki: member of the steering committee (2007-2013); Helsinki Graduate School in Computer Science and Engineering: member of the board of directors (2004-2015), member of the management group (2006-2015), director (2011-2015); Kumpula science library: member of the steering committee (2007-2010); Data to Intelligence, a national SHOK programme: academic coordinator (2012-2016); 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-); The Finnish Club in Helsinki, member (2012-).

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**On scientific and societal impact.** Petri Myllymäki has published around 150 peer-reviewed articles with around 3500 citations in Google Scholar, and his h-index is 27. He is a co-founder of 4 start-ups: Etsimo, Ekahau, Cloud'N'Sci and BayesIT, is currently the Academic Coordinator of the “Data to Intelligence” (d2i.fi) national 4-year research programme with 53 industrial and 17 academic partners, and has also extensive previous experience of cooperation with international industry. The companies involved in his past consulting/collaboration activities 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 example 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). Dr. Myllymäki worked as a domain expert for the 2012 Millennium Award Committee. He has also worked as a scientific reviewer and expert evaluator for the European Research Council, 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, The Finnish Work Environment Fund and the Academy of Finland, Aalborg University, Denmark, The Swedish Foundation for Strategic Research and University of Electro-Communications, Japan.

**Externally funded research projects.** Petri Myllymäki has been the responsible leader of numerous 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 several million euros. The external partners involved in these projects include Nokia, Tieto, F-Secure, Elisa, M-Brain, Kesko, Kone, StoraEnso, Space Systems Finland/European Space Agency, ABB, AlmaMedia, The Finnish Patent Office, Finnish Association on Intellectual and Developmental Disabilities, Finnish Federation of the Visually Impaired and the Mechanical Engineering and Metals Industry Standardization Association of Finland. More information can be found at <http://www.hiit.fi/cosco/projects>.

**Patents.** Low-dimensional information discovery and presentation system, apparatus and method (US 20150088871); 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)

**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).

**Conference organization activities.** International Joint Conference on Artificial Intelligence, Senior Programme Committee member (2011,2013,2015); International Conference on Uncertainty in Artificial Intelligence (UAI), Senior Programme Committee member (2013,2014,2015); Technical Co-Chair, International Workshop on Information Theoretic Methods in Science and Engineering (2008-2015); Co-chair of Studia Stemmatalogica, a series of six international workshops on stemmatology (2010-2012); Program and Conference Chair,

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Probabilistic Graphical Models (PGM'2010); Program Chair, Uncertainty in Artificial Intelligence (UAI'2008); 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.** The 2015 International Symposium on Learning and Data Sciences (SLDS-2015), The European Workshop on Probabilistic Graphical Models (PGM-2012, PGM-2014); The 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 and conferences.** 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, 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.

**Tutorials and invited talks.** *Big Data: Problem or Opportunity?* Invited talk at the HETKY Seminar "Oivalluksia 6, Data to Intelligence", 9.10.2014; *Predictive Technologies and Big Data*, invited talk at the DIGILE Foresight Seminar: Unbounding computation, communication, cognition and mind, Helsinki, 27.11.2013; *Data to Intelligence*, invited talk at the CSC seminar: A Finnish view on exchanging and using global research data, Espoo, 03.12.2013; *Somebody Needs Your Algorithm - Cloud'N'Sci.fi*, invited talk in the Industry Track of the ECML/PKDD'2012 conference, Bristol, UK, 27.09.2012. *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/Stockholm, 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

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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).

**Teaching merits.** Petri Myllymäki has supervised the following doctoral dissertations: Hannes Wettig (2013): Probabilistic, Information-Theoretic Models for Etymological Alignment; 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 where he has supervised over 80 M.Sc. theses. He is currently the director of the Helsinki Doctoral Programme in Computer Science and the director of the Helsinki Doctoral Education Network in ICT. 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.

**Opponent or external referee for academic dissertations.** Juan Diego Rodriquez (Advances in Error Estimation and Multi-Dimensional Supervised Classification. Ph.D. thesis, University of the Basque Country, Spain, 2013); Alireza Razavi (On Statistical Modelling and Hypothesis Testing by Information Theoretic Methods. Ph.D. thesis, Tampere University of Technology, 2011); 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. 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).