

# Biography of Henry Tirri

## Basic information

**Henry Rainer Tirri** is currently a Research Fellow at Nokia Research Center. He is also a tenured Professor in Computer Science at Computer Science Department at University of Helsinki and an Adjunct Professor in Computational Engineering (Helsinki University of Technology). Henry Tirri graduated from Helsingin Suomalainen yhteiskoulu (Helsinki, Finland) and received his BSc, MSc and PhD in Computer Science from University of Helsinki.

His professional work history can be described as follows: 1978-1983 several positions at the Department of Computer Science from Teaching Assistant and Assistant to Assistant Professor (University of Helsinki). 1983-1985 Research Associate (Academy of Finland). 1985-1986 Visiting Fulbright Scholar, University of Texas at Austin. 1986 Consultant, Microelectronics and Computer Technology Corporation (MCC). 1986-1987 Research Associate (University of Helsinki). 1987-1988 Several positions from Assistant Professor to Associate Professor (University of Helsinki). 1988 Visiting Scientist at AT&T Bell Laboratories. 1989-1990 Research Associate (University of Helsinki). 1990-1992 Visiting Associate Professor, Purdue University. 1992-1998 Several positions from Research Associate to Associate Professor (University of Helsinki). 1998 Visiting Scientist, NASA Ames Research Center. 1998- Professor, Chair in Intelligent Systems (University of Helsinki). 2000- Professor, Chair in Computer Science (University of Helsinki). 2001-2003 Visiting Professor in Computer Science, Stanford University, 2003-2004 Visiting Scholar in Computer Science, University of California, Berkeley.

## Research and Researcher training activities

**Publication activities.** Henry Tirri has published more than 160 international publications in books, journals and conferences in the areas of probabilistic and information-theoretic modeling, text and data mining, neural networks, case-based reasoning, transaction processing, intelligent learning environments, knowledge-based systems and data-analysis in education. His work is both theoretical and applied in nature, and the applied work has a strong multidisciplinary flavor. His current interests focus on next generation search technologies, personalization, modeling and game theory and mobile positioning with probabilistic modeling.

## **International academic and professional activities**

**Editorial board positions.** Member of the editorial board of the Computer Journal (Oxford University Press) (1995 – 1998). International Journal of

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Mobile Communications (2002-). Web Intelligence and Agent Systems – An International Journal (IOS Press) (2002-2004). International Journal of Neural Systems (World Scientific) (2002-).

**Conference Chair positions.** International Conference on Machine Learning (ICML-2001) (Area Chair for Uncertainty in Artificial Intelligence and Bayesian Learning), Program Co-Chair of 2004 Web Intelligence (WI-04).

**Program Committee memberships.** "Graph Reduction"-workshop held in Santa Fe, New Mexico (1986). IEEE 11th International Conference on Distributed Computing Systems (1990-1991). IEEE First International Workshop on Interoperability in Multidatabase Systems (IMS-91) (1990-1991). Conference on Very Large Data Bases (VLDB'92) (1991). Applications of Databases (ADP-94)(1993). 2nd European Conference on Case-Based Reasoning (EWCBR'94) (1994) . Research Issues in Data Engineering '95 (RIDE-95)( 1994) . Scandinavian Conference on Artificial Intelligence (1994)(SCAI'95). International Conference on Case-Based Reasoning (ICCBR-95) (1995). 3rd European Conference on Case-Based Reasoning (EWCBR-96) (1996). The Advances in Parallel and Distributed Systems (APADS'96) (1996). Workshop on Case-Based Learning: Beyond Classification of Feature Vectors (1997). 4th European Conference on Case-Based Reasoning (EWCBR-98) (1998). Software Technology Track of the 33<sup>rd</sup> Hawaii International Conference on System Sciences (HICS-33) (1998). Evolutionary Computation Conference - GECCO 1999 (1999). Networks'99 (1999). 5<sup>th</sup> European Conference on Case-Based Reasoning (EWCBR2) (2000). International Conference on Machine Learning (ICML-2000)(2000). 8<sup>th</sup> Workshop on Artificial Intelligence and Statistics (AISTATS-2001) (2000). International Symposium on Adaptive systems (ISAS-2001) (2001). Workshop on Machine Learning as Experimental Philosophy of Science (2001). The Third IEEE Workshop on Wireless Local Areas Networks (2001). Workshop on Applied Parallel Computing (PARA'02) (2002). 6<sup>th</sup> European Conference on Case Based Reasoning (2002). European Conference on Machine Learning (ECML'02) (2002). International Symposium on Applications and the Internet (SAINT'03) (2003). The First International Conference on Mobile Systems, Applications, and Services (MobiSys) (2003). European Conference on Machine Learning (ECML'03) (2003). Uncertainty in Artificial Intelligence (UAI'03)(2003). International Symposium on Applications and the Internet (SAINT'04) (2004). 7<sup>th</sup> European Conference on Case-Based Reasoning (ECCBR) (2004). Uncertainty in Artificial Intelligence (UAI'04)(2004). European Conference on Machine Learning (ECML'04) (2004). International Conference on E-Business and Telecommunications (ICETE 2004) (2004), International Symposium on Applications and the Internet (SAINT'04) (2004), 10<sup>th</sup> Workshop on Artificial Intelligence and Statistics (AISTATS-2005) (2004), International Conference on Case-Based Reasoning (ICCBR-05) (2005).

**Networks of Excellence, Working Group memberships and coordination.** European Community Cost 11 project "Distribution Aspects

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of Information Systems" (DAISY) (1986-1987) (working group member). European Community Cost 11<sup>ter</sup> project "Interoperability of Heterogeneous Information Systems" (IHIS) (1988-1991 )(coordinator). Organizing Committee member of Nordic Summer School on Neural Computing (1991)(Finnish coordinator). European Community Cost 14 Project Computer Supported Cooperative Work, WG 7: Communication and Distributed System Support for CSCW (1993-1995) (Working group member). European Community ESPRIT III Network of Excellence in Neural Networks (1994-1998)(NEURONET) (Associate node coordinator). Technology Program for "Applications of the Intelligent and Learning Systems" (1994) (Member of planning committee). European Community EC Network of Excellence in Neural Networks (NEURONET II) (1998-2000) (Associate node coordinator). Pattern Analysis, Statistical Modelling, and Computational Learning (PASCAL) (2004), 6<sup>th</sup> Framework Network of Excellence (Steering Committee member). Superpeer Semantic Search Engine (ALVIS) (2004-2006), 6<sup>th</sup> Framework STREP. IASTED Technical Committee on Neural Networks 2003-2006.

**Periods of research abroad.** Visiting Fulbright Scholar at the Department of Computer Science, University of Texas at Austin, Austin, Texas, USA (June 1985 - March 1986). Consultant, Microelectronics and Computer Technology Corporation (MCC), Austin, Texas, USA (April - September 1986). Visiting Scientist at AT&T Bell Labs, Holmdel, New Jersey, USA (July - December 1988). Visiting Associate Professor at the Department of Computer Sciences, Purdue University, West Lafayette, Indiana, USA (August 1990 - August 1992). Visiting Scientist at NASA Ames Research Center, Mountain View, California, USA (June 1998 - August 1998). Visiting Professor at Stanford University, Palo Alto, California, USA (January 2001 – August 2003). Visiting Scholar at University of California, Berkeley (September 2003 - 2004).

### **Keynotes and Invited talks**

- *"Minimum Description Length (MDL) Principle and its applications to Pattern Classification"*. Keynote address at the 14<sup>th</sup> International Conference on Pattern Recognition (ICPR'98), Brisbane, Australia, August 1998.
  - *"Urban Legends in Bayesian Network Research"* Invited talk at Networks'99, Helsinki, Finland, August 1999.
  - *"Intelligent Systems for Intelligent Learners"* Keynote address in International Conference on Innovations in Higher Education 2000, Helsinki, Finland, August 2000.
  - *"Science of Uncertainty: On the convergence of Mathematical Statistics, Information Theory and Computer Science"* Keynote address in Artificial Intelligence 2000, Helsinki, Finland, August 2000.
  - *"B-Course - a free Bayesian data analysis service"* Invited talk at NIPS Workshop on Software Support for Bayesian Analysis Systems, Denver, United States, December 2001.
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- *"Prediction based visualization"* Invited talk at Prospects of Data Mining - a cross-disciplinary workshop, Helsinki, Finland, April 2001.
- *"Future learning environments: intelligent learners and intelligent machines"* Invited talk at Pedaforum 2001, Helsinki, Finland, April 2001.
- *"Minimum encoding approaches to classification"* Invited talk at NIPS Workshop on Minimum Description Length: Developments in Theory and New Applications, Vancouver, Canada, December 2001.
- *"Competitive Games of Art in the Global Information Space"* Invited talk at ARS'01 (Art Exhibition) seminar, September 2001.
- *"Adaptation in complex systems"* Invited talk at the Symposium on Complex Systems, Espoo, Finland, December 2001.
- *"ICT as a Tool of Transformation"* Keynote talk at Learningspace Workshop, Cambridge, United Kingdom, April 2002.
- *"Emergent learning"* Keynote talk (in Finnish) at ITK2002, Hämeenlinna, Finland, April 2002.
- *"Information Search, Personalization and Privacy"* at the 1st International Workshop on Wireless Security Technologies (London, UK), April 2003.
- *"Networked: the new science of collaborative giftedness"* at the 9<sup>th</sup> Conference of the European Council for High Ability (Pamplona, Spain), September 2004.
- *"Predictive Probabilistic models: a unified approach to mobile device positioning"* at the 15<sup>th</sup> IEEE International Symposium on Personal, Indoor and Radio Communications (PIMRC 2004) (Barcelona, Spain), September 2004.
- *"Fundamental Challenges of Next Generation Information Retrieval"* at the International Conference on E-Business and Telecommunications (ICETE 2004)

**Research projects and external funding.** Henry Tirri has more than 12 years of experience in managing European Union projects (1987-2001), as well as National Technology Agency (TEKES) funding (1988-2002). It should be observed that for NTA funded projects there are always several companies involved. The set of cooperating companies include ABB Corporation, Ahlström, Almamedia, Kibron, Kone Corporation, Nokia, M-Brain, Space Systems Finland, Tekla, Trema, and Wärtsilä Diesel (not an exhaustive list).

**Memberships in scientific societies.** Association for Computing Machinery (1979-). IEEE Computer Society (1988-). International Neural Network Society (INNS) (1988-). Member of IEEE (1993-). American Educational Research Association (1994-). American Association for Artificial Intelligence (1998-).

**Referee for professional journals, conferences, and book agencies.**  
**Journals.** Data Mining and Knowledge Discovery, Journal of American

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Statistical Association, IEEE Transaction on Neural Networks, Machine Learning, Neural Networks, International Journal of Engineering Intelligent Systems, IEEE Transactions on Computers, IEEE Transactions on Software Engineering, IEEE Transaction on Knowledge and Data Engineering, IEEE Transactions on Information Theory, VLDB Journal, ACM Transactions on Database Systems, BIT, Nordic Journal of Computing. **Conferences.** International Conference on Machine Learning (ICML), IEEE International Conferences on Distributed Computing Systems, Data Engineering, International Conferences on Very Large Databases (VLDB), EUTECO, ICALP, IJCAI, Artificial Intelligence and Statistics, European Workshops on CBR (EWCBR), International Conference on Case-Based Reasoning (ICCBR), Scandinavian Conference on Artificial Intelligence, Research Issues in Data Engineering (Interoperability in Multidatabase Systems, Distributed Object Management). **Book Agencies.** Ellis Horwood, The Benjamin/Cummings, Addison Wesley, Morgan Kaufmann, W.H.Freeman&Co, McGraw-Hill

### **Cooperation with research groups**

**Complex Systems Computation Group.** Henry Tirri has established his own research group, Complex Systems Computation Group (CoSCo) at University of Helsinki (1995-). The research group consists of researchers working in the area of probabilistic and information-theoretic modeling and data analysis in computer science and statistics. (Former members in his group include Linus Torvalds). In two recent (1997,1999) evaluations in NTA Research programmes and a recent evaluation by Academy of Finland (Madame Programme 2003), the group has received excellent remarks for both the theoretical and more applied work. Respective research groups in the area of Bayesian networks exist only at Microsoft Research (USA) and University of Aalborg (Denmark).

**International cooperation.** Henry Tirri has established excellent research contacts to all major probabilistic modeling research groups in the world, including Decision Theory Group at Microsoft (USA), Statistics Department at the University of Washington (USA), The Research Unit of Decision Support Systems at Aalborg University (Denmark), Data Understanding Group at NASA (USA), MML group at Monash University (Australia), professor Vitanyi's research group at CWI institute (The Netherlands), professor Phil Dawid at University College London (Great Britain). In addition he did joint work with the Mosquitonet and Database groups at Stanford University (USA) in the area of distributed computing, and due to his other interests (transaction processing, CBR, neural networks) has excellent contacts to IBM Almaden Research (USA), Fraunhofer IPSI (Germany), CERN (Switzerland), University of Paris (France) and Trinity College (Ireland). Many of these connections are based on personal cooperation with principal group members or directors, such as Peter Cheeseman (NASA), David Heckerman (Microsoft), Peter Grünwald (CWI), Robert Morris (IBM), Thomas Richardson (University of Washington), David Dowe (Monash), Mary Baker (HP Laboratories), Witold Litwin (University of Paris) and Erich Neuhold (Fraunhofer). He is currently collaborating with

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Michael Jordan and Marti Hearst (University of California, Berkeley) as well as the partners in the ALVIS projects.

**Domestic cooperation.** Henry Tirri's research connections within Finland are related his varying interests from theory of modeling and its applications to distributed computing. These connections include two Centers of Excellence, Laboratory of Computer and Information Science and Laboratory of Computational Engineering (Helsinki University of Technology), Department of Computer Science (University of Jyväskylä) and Research Centre for Vocational Education (University of Tampere).

**Technology transfer and dissemination.** Henry Tirri has extensive experience of cooperation with international industry for technology transfer of the research results. The companies involved in his consulting activities include NASA (intelligent systems for the Mars Missions), Microelectronics and Computer Technology Corporation (MCC) (evaluation of novel parallel architectures with real applications), AT&T (transaction processing in manufacturing, neural networks), 3M Corporation (CBR and neural computing in manufacturing), NCR (development of high-performance transaction processing and design tools for high-performance distributed databases), 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 container packing). Henry Tirri is in the boards of Nexit Ventures (<http://www.nexitventures.com>), Technical Advisory board of Ekahau Inc, (<http://www.ekahau.com>) and in the scientific advisory board of eWSOY. He holds several joint patents based on his research activities. The technology based on Dr. Tirri's work by Ekahau Inc has been awarded by several international awards (European IST Prize 2002, PlanetPDA etc.).

In addition to the regular publication channels, lot of his work has been disseminated through software (either commercially fielded or public domain). Examples of such software are

- KOPTIMI. Software for intelligent container packing. Cost-function based optimization for 3D-packing of ship containers aimed at paper industry. Successfully in use at the world second largest company in paper industry, StoraEnso since January 1999. A fielded application, 1998.
  - BAYDA. Software for Bayesian Discriminant Analysis (i.e., classification). Available at CoSCo WEB-site and freely down-loadable for research and teaching purposes. More than 2300 users world-wide, an earlier version available also with a book aimed at researchers in education. Also available on CD-ROM, 1998.
  - B-COURSE. Bayesian tutorial and data analysis service for dependency analysis. Provides for learning both Bayesian networks and causal networks. Available via a WEB-site and free for teaching and research purposes, released November 2000 and new version November 2002. More than 10000 users world-wide.
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- EDUFORM. Generic interactive adaptive online questionnaire server software that uses Bayesian modeling to model user in order to be able to ask less questions than traditional (corresponding) questionnaires do. Can be applied to various different domains (business, surveys etc.), but the current design is focused on e-learning environments.
- EDUCO. Social navigation software for the Web. Provides visual interface for auditing users of an arbitrary set of Web-pages as well as a sophisticated online chat facility. Currently used for e-learning environments.
- OURWEB. Personalized Writable Web for learning communities. Currently used for e-learning environments.

### **Researcher training and graduate schools**

**Supervision.** Henry Tirri's supervision of graduate studies is through both the CoSCo research group and individual supervision. Henry Tirri was the Director of Helsinki Graduate School in Computer Science and Engineering (HeCSE) (2003-2004) and a board member of the multidisciplinary Graduate school for Learning environments (2001-). Since 1996 he has been delivering annually several short courses and graduate seminars for multi-disciplinary audiences including Helsinki Summer School 2000 course on Intelligent Data Analysis, and American Educational Research Association (AERA) mini-courses on Bayesian modeling. In general the participants to these courses have been from fields ranging from education to biological sciences and computer science.

### **Thesis opponent**

- Seppo Kuusisto, PhD Thesis "Application of the PMDL Principle to the induction of classification trees" (Tampere University of Technology) (1998)
  - Jan-Christian Lehtinen, PhD Thesis "Reproducing kernel splines in the analysis of medical data" (University of Turku) (2000)
  - Paul Raduma, PhD Thesis "Case-Based Reasoning in Knowledge-Based CAAD: Modelling Case Representation for Architectural Design Reuse" (Helsinki University of Technology) (2001)
  - Petri Korpisaari, PhD Thesis "Studies on Data Fusion Techniques for Multitarget Tracking" (Tampere University of Technology) (2001)
  - Anssi Lensu, PhD Thesis "Computationally Intelligent Methods for Qualitative Data Analysis" (University of Jyväskylä) (2002)
  - Antonina Kloptchenko, PhD Thesis "Text Mining Based on The Prototype Matching Method" (Åbo Akademi)(2003)
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## Thesis inspection

- Seppo Kuusisto, PhD Thesis "Application of the PMDL Principle to the induction of classification trees" (Tampere University of Technology) (1998)
- Petteri Pajunen, PhD Thesis "Extensions of Linear Independent Component Analysis: Neural and Information-Theoretic Methods" (Helsinki University of Technology) (1998)
- Jaakko Hollmén, PhD Thesis "User profiling and classification for Fraud Detection" (Helsinki University of Technology) (2000)
- Erkki Häkkinen, PhD Thesis "Design, implementation and evaluation of the Neural Data Analysis environment" (University of Jyväskylä) (2001)
- Eila Lindfors, Lic. Thesis "The important knowledge for a Consumer in Textile Technology assessed by experts" (University of Joensuu) (2001)
- Aki Vehtari, PhD Thesis "Bayesian model assessment and selection using expected utilities" (Helsinki University of Technology) (2001)

## Research awards, research honors and competition awards

**Research honors.** Distinguished Master Thesis Award, The Section of Mathematics and Natural Sciences of the Faculty of Philosophy, University of Helsinki (1982). Stipendiary support, The Cultural Foundation of Finland (1983,1985). ASLA-Fulbright Study Grant, U.S. Educational Foundation in Finland (1985). Grant for graduate studies in U.S., Academy of Finland (1985). Stipendiary support, Emil Aaltonen Foundation of Finland (1986). Ministry of Education Graduate Research Fellowship (1986). **Competition Awards.** 2<sup>nd</sup> place for the CoSCo-submission in the CoIL Challenge 2000 - an International Prediction Competition (2000). The second edition of the CoIL Challenge was held from March 17 until May 8 2000. There were 147 participants registered. The goal of the CoIL Challenge is to promote the application of computational intelligence and learning technology to real world problems, to clarify the relations between different approaches and to stimulate the search for solutions that combine different methods. The challenge is organized by the Computational Intelligence and Learning (CoIL) cluster. An honorable mention at the Knowledge Discovery and Databases prediction competition (KDD Cup'01) for being 2<sup>nd</sup> out of 114 participating international groups in the Pharmaceutical prediction task concerning molecular bioactivity.

## Teaching activities

**General.** Henry Tirri has more than 20 years of teaching experience from teaching at several universities. This teaching includes classroom instruction (lecturing), group supervision for laboratory work and supervision of Master, Phil. Lic. and PhD Theses both in Finnish and English. Since 1978 he has taught courses at University of Helsinki, Department of Computer Science and early 1980's acted also as a special teacher at the Helsinki University of Technology (Laboratory for Digital Processing). In

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1990-1992 he was a visiting associate professor at Purdue University where he taught many undergraduate and graduate courses. He has also given several tutorials and short courses in neural computing and probabilistic reasoning. His most recent teaching activities include developing teaching material for the Intelligent Systems specialization area at the department including the "Three Concepts"-courses, which are related to the theoretical foundations of Intelligent systems. In addition during the recent years, he has developed material for introductory courses in Uncertain Reasoning (1997), Neural Networks (1993, taught in English) at the Department of Computer Science, University of Helsinki, and an introductory database course taught at Purdue University (1992). He is currently actively involved in the development of WEB-based learning environments and the Finnish Virtual University. In the sequel his teaching activities are grouped into three categories: invited short courses, tutorials and course and curriculum development.

### **Invited short courses given**

- "Modern nonlinear methods for quantitative analysis in social sciences". Invited mini-course. Institute for Extension studies, University of Tampere, Hämeenlinna, February - March 1996, April 1997.
- "Bayesian Predictive Modeling for Classification". Invited mini-courses given at the Annual meetings of American Educational Research Association (AERA'98), San Diego, California, April 1998, AERA'99, Montreal, Canada, April 1999.
- "Introduction to Modeling with Bayesian Networks". Invited mini-course given at the Annual meeting of American Educational Research Association (AERA'00), New Orleans, April 2000.
- "Modern nonlinear data-analysis methods". Invited mini-course. Institute for Extension studies, University of Tampere, Hämeenlinna, April-June, 1999.
- "Modern nonlinear data-analysis methods". Invited mini-course. Research Centre for Vocational Education, University of Tampere, Hämeenlinna, May, 2000.
- "Bayesian modeling in education". Invited mini-course. Department of Education, University of Turku, Turku, April, 2000.
- "Intelligent Data Analysis: the Bayesian Approach". Invited intensive course. Summer School 2000, University of Helsinki, August, 2000.
- "Bayesian modeling with B-Course". Invited mini-course. Department of Education, University of Helsinki, Helsinki, March, 2001, January 2003.

### **Tutorials given**

- "*Neural Information Processing and Applications*". Third International Conference on Foundations of Data Organization and Algorithms (FODO'89), Paris, June 1989.
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- *"Neural Information Processing"*. University of Athens, Athens, April 1989.
- *"Neural computing in AI problems"*. Finnish Artificial Intelligence Symposium, Oulu, June 1990.
- *"Neural networks and applications"*. Purdue University, April 1992.
- *"Minimum encoding modeling"*. Purdue University, April 1997.
- *"Bayesian modeling in education"*. Annual Finnish Educational Symposium, Lahti, November 1997.
- *"What Bayesian modeling has to offer for educational research?"*. NFPF Congress, Lahti, March 1998.
- *"Bayesian modeling"*. Annual Finnish Educational Symposium, Kainuu, November 1998.
- *"Bayesian modeling"*. Graduate school KASVA (University of Tampere, University of Oulu), Saitiala, September 1999.

**Curriculum development.** Member of the Teaching Development Committee of the Faculty of Science (1998-2001). Member of the Teaching Development Committee of the Department of Computer Science (1998-1999). Professor responsible for the Intelligent Systems specialization area at the Department of Computer Science (1999-).

**Teaching material.** The 1998 Report (in Finnish) on Introduction to Bayesian Networks has been used as course material at several universities including Helsinki University of Technology and University of Jyväskylä. The book "Modern Modeling of Professional Growth" is required reading in postgraduate studies in Vocational Education.

**Finnish Virtual University.** Henry Tirri is recognized for his work in developing information technology for new learning environments. He was appointed in the National Board for Learning Environments (2000-2004), and has actively participated in the research and development of the Finnish Virtual University through the EDUTECH-track (<http://eduform.cs.Helsinki.fi>) of the NTA funded Personalized Adaptive Interfaces-project, and the IQ-FORM-project (<http://www.edu.helsinki.fi/iqform/>), a joint activity with the Department of Education (University of Helsinki) and several other Education departments from Finnish Universities. In recognition of his work, he was one of the four Keynote speakers in the recent (2000) conference in Innovations in Higher Education.

## Other activities

**Expert positions.** Member of the Board for Society for Computer Science Professionals in Helsinki (Hetky) (1987-1990). Member of the Board of the University of Helsinki TULI-project (1995-1997). Member of the Ministry of

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Education Board for Learning Environments (part of the National Information Technology Strategy in Education 2000-2004). Member of the IT-development Board of the Safety Technology Authority (TUKES) (2000-2001). Reviewer, Academy of Finland (Research council for Natural Sciences and Engineering) (2000-). Member of the Scientific Advisory Board of eWSOY.

**Evaluations for academic positions.** Evaluator for PhD Samuel Kaski for the Professor position (Chair in Information Technology, in particular signal processing and neurocomputing), Laboratory of Computer and Information Science, Helsinki University of Technology (1999). Evaluator for PhD David Dowe for the Associate Professor position, School of Computer Science and Software Engineering, Monash University, Australia (2002). Expert evaluator for the Professorship in Intelligent Software Services, Department of Computer and Systems Sciences, Kungliga Tekniska Högskolan (KTH), Sweden (2002), Evaluator for PhD Timo Honkela for the Docentship in Computational Linguistics, University of Helsinki (2004).

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