

1. Lauri Tuomas Ensio Malmi, male**2. Formal education**

- Doctor of Science in Technology (Computer Science), Department of Computer Science and Engineering, Helsinki University of Technology, 1997.
- Master of Science in Technology, Department of Technical Physics, Helsinki University of Technology (TKK), passed with honor, 1985. Major: Computer Science

3. Current employment

Aalto University, School of Science, Department of Computer Science

Professor of Computer Science (Modeling, analysis and visualization of programs). 1.1.2008 - ,

- Main research areas: Computing education research, educational technology

4 Previous employments

Aalto University, Chair of strategic initiative: Aalto Online Learning (A!OLE) 01.01.2016 – 31.12.2020
(part time position)

Aalto University, School of Science

Vice dean of education, (part time position) 01.02.2015 – 31.12.2016

Helsinki University of Technology, Laboratory of Information Processing Science

Professor of Computer Science (Methodology of Programming Education) 01.11.2001 - 31.12.2007

Professor pro tem (computer science) 01.08.1999 - 31.10.2001

Researcher / Lecturer / Full-time teacher (several fixed time nominations) 01.07.1986 - 31.07.1999

Helsinki University of Technology, Computing Centre

Application designer / Senior designer 01.01.1984 - 30.06.1986

5. Research funding, projects, supervision experience*1. Funding for projects with research component*

- Smart Content for Python Programming, Partner subcontract for University of Pittsburgh, US (165 692 USD, 2014-2016), funded by Advanced Distributed Learning, US, principal investigator (PI)
- ISiCLE – Interoperability and Social Media In Computer Science Learning Environments (200000 €, 2011-2014), Foundation of 100 years of Technology industry in Finland, PI, in collaboration with Dr. Ari Korhonen
- TAPAS - Automated Assessment Technologies for Free Text and Programming Assignments (171200 €, 2006-2009). Consortium with University of Joensuu, chaired by prof. Erkki Sutinen, funded by Academy of Finland, PI
- Network of Introductory Programming (300000 €, 2006-2008)
 - Joint initiative with University of Turku and Tampere University of Technology, funded by Ministry of Education, PI, in collaboration with Dr. Ari Korhonen

2. Funding based on the status as the Center of Excellence in Education

- National Center of Excellence of Education (Department of Computer Science and Engineering), (900000 €, 2010-2012), funded by Ministry of Education, PI, in collaboration with Dr. Ari Korhonen and prof. Marko Nieminen.
- National Center of Excellence of Education (Basic Computing Education at Helsinki U. of Tech., TKK) (830000 €, 2004-2006), funded by Ministry of Education, PI
- National Center of Excellence of Education (Basic Computing Education at TKK) (830000 €, 2001-2003), funded by Ministry of Education, PI
- Center of Excellence of Education at TKK (Basic Computing Education) (35000 €, 1999-2000), funded by TKK, PI

3. Major funding for educational development projects

- Adapting Finnish Programming Education Solutions in Korea. International collaboration funding from Finnish National Agency for Education. In collaboration with Chosun University, Republic of Korea (28 K€, 2018-2020), PI

- Digital education for all, partner in a national level project funded by Ministry of Education and Culture (government's key project) to develop open university education in computer science. Consortium with 5 universities, coordinated by University of Helsinki (200 K€, 2018-2021).
- Intelligent learning environments, national level project funded by Ministry of Education and Culture (government's key project) to develop university education in computer science, mathematics and physics. Consortium with 10 universities and 3 universities of applied sciences, coordinated by Aalto (1,7M€, 2018-2021), PI.
- Koodiaapinen for Finnish school teachers (15000 €, 2016-2017), together with University of Helsinki (Tiina Korhonen, Arto Vihavainen), funded by Ministry of Education.
- Programming in Python MOOC ("Kiinnostaako koodaus?") for Finnish school teachers (30000 €, 2015-2016), together with University of Helsinki (Tiina Korhonen, Arto Vihavainen), funded by Ministry of Education.
- Introductory programming MOOC (110000 €, 2014-2016), funded by Aalto School of Science, PI
- Research training course "Introduction to Engineering Education Research", in collaboration with Uppsala University and Aalborg University, PI, (357700 NOK, 2010), funded by NordForsk
- Interactive Learning Environment of Spatial Data Structures (60000 €, 2006), PI funded by TKK
- Learning environment for programming (50000 €, 2004), funded by TKK

4. *Research leadership*

- Chair of Learning + Technology Research group from 2000-, which focuses on advanced learning environments for programming education (automatic assessment, program visualization, algorithm visualization, gamification), investigating students' learning process in programming and generic learning technologies. The group has published 400+ scientific journal and conference papers, and its members have completed 17 PhD theses. See <https://www.aalto.fi/department-of-computer-science/letech-research-group-learning-technology>

5. *Supervised postdocs* (10)

- Lassi Haaranen, 2019-2020, Tapio Auvinen 2015–2016, Juha Sorva 2012-2015, Otto Seppälä 2012-2015, Päivi Kinnunen 2013-2015, Juha Helminen, 2014, Petri Ihantola 2011-2014, Ville Karavirta 2009-2013, Jan Lönnberg 2012-2013, Ahmad Taherkhani 2013, Ari Korhonen 2003-2006.

6. *Supervised PhD theses* (18), *in all cases the principal instructor*

1. Rodrigo Duran, *Cognitive Complexity of Comprehending Computer Programs*, 2020
2. Lassi Haaranen, *Game-Related Learning and Exposure in Computer Science*, 2019
3. Teemu Sirkiä, *Creating, Tailoring, and Distributing Program Animations - Supporting the Production Process of Interactive Learning Content*, 2017
4. Aura Paloheimo, *Women and Higher Engineering Education – Supporting Strategies*, 2015,
5. Simon, *Emergence of computing education as a research discipline*, 2015,
6. Tapio Auvinen, *Educational Technologies for Supporting Self-Regulated Learning in Online Learning Environments*, 2015,
7. Lasse Hakulinen, *Gameful Approaches for Computer Science Education, From Gamification to Alternate Reality Games*, 2015,
8. Juha Helminen, *Supporting Acquisition of Programming Skills in Introductory Programming Education: Environments for Practicing Programming and Recording and Analysis of Exercise Sessions*, 2014,
9. Ahmad Taherkhani, *Automatic Algorithm Recognition Based on Programming Schemas and Beacons: A Supervised Machine Learning Classification Approach*, 2013,
10. Jussi Nikander, *Interaction and Visualization Methods in Teaching Spatial Data Algorithms and Analyzing Spatial Data*, 2012,
11. Otto Seppälä, *Advances in Assessment of Programming Skills*, 2012,
12. Juha Sorva, *Visual Program Simulation in Introductory Programming Education*, 2012,
13. Jan Lönnberg, *Understanding and Debugging Concurrent Programs Through Visualisation*, 2012,
14. Petri Ihantola, *Automated Assessment of Programming Assignments: Visual Feedback, Assignment Mobility, and Assessment of Students' Testing Skills*, 2011,
15. Ville Karavirta, *Facilitating Algorithm Visualization Creation and Adoption in Education*, 2009,
16. Päivi Kinnunen, *Challenges of teaching and studying programming at a university of technology - Viewpoints of students, teachers and the university*, 2009,
17. Sami Surakka, *Needs Assessment of Software Systems Graduates*, 2005,
18. Ari Korhonen, *Visual Algorithm Simulation*, 2003,

Currently supervising 8 doctoral thesis projects at Aalto University and 5 doctoral students working in other institutions.

6. Teaching experience and prizes

Teacher in charge of numerous courses in, e.g., programming, data structures and algorithms, learning technology, and research methods. Supervised 85+ Master's thesis projects. About 40 ECTS pedagogical training. Numerous curriculum design tasks.

Prizes:

- Teacher of the year 1999, Helsinki University of Technology,
- Excellent Education in Electronics (Elektroniikka-insinöörien seura r.y), 2000.
- Aalto Student Union (AYY) award for excellent leadership in digitalisation project related to Aalto Online Learning, 2017.
- ACM SIGCSE award for Outstanding Contribution to Computer Science Education, 2020.

7. Scientific activities and positions of trust

Professorship evaluation

- Evaluated 21 promotions on tenure track or application in open calls in Australia, Denmark, Israel, New Zealand, Sweden, UK and US.

Other evaluation

- Evaluated 3 promotions in educational track in Sweden or UK.
- Evaluated 3 nominations for docentship in Finland

Dissertation assessment (opponent or member of evaluation committee)

- Assessed 18 PhD theses in Australia, Belgium, Denmark, Finland, New Zealand, Spain, Sweden, and UK

Program committees, chairing

- ICER, International Computing Education Research Conference, program co-chair 2017-2018
- Koli Calling, International Conference on Computing Education Research, chair 2004, co-chair 2008
- Reflektori 2007, National symposium on Engineering Education, program chair
- Program Visualization Workshop, PVW, chair 2004

Program committees, memberships

- ICER, International Computing Education Research Conference
- ISSEP 2006, Informatics in Secondary Schools
- Koli Calling, International Conference on Computing Education Research
- LaTiCE 2013-2014, IEEE conference on Learning and Teaching in Computing and Engineering
- NoPhiCER, Nordic Workshop on Phenomenography in Computing Education Research
- Program Visualization Workshop, PVW
- Softvis, ACM Symposium of Software Visualization

Memberships of editorial board of scientific journals (past or ongoing)

- IEEE Transactions of Learning Technologies, ACM Transactions on Computing Education, ACM Inroads

Other scientific positions of trust

- Board member, SEFI working group on Engineering Education Research (2009-)
- Board member, NNEER, Nordic Network of Engineering Education Research (2010-2013)
- Board member, Finnish Society for Computer Science (1990-1992, 2007-2009), vice president 2009.
- Chair of evaluation committee for School of Computer Science and Communications in Education Assessment Exercise at Kungliga Tekniska Högskolan, Sweden, 2011.

Referee in scientific journals

- ACM JERIC, Journal of Educational Resources in Technology, ACM Transactions on Computing Education, Computer Science Education, European Journal of Engineering Education, IEEE Transactions

on Education, Informatics in Education, Information & Software Technology, Journal of Engineering Education, Nordic Journal of Computing, Higher Education Pedagogies

Referee in scientific conferences

- ACM ITICSE, ACM SIGCSE 2006-2008, Annual SEFI conference