

1. Personal details and the date of the CV

Surname Lehtonen
First names Teijo Tapani
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Date of the CV 29.1.2022

2. Degrees

Doctor of Science (Technology) (Tekniikan tohtori), University of Turku, November 2009, Field of Study: Electronics, Technology, Major Subject: Computer Systems, Thesis: *On Fault Tolerance Methods for Networks-on-Chip*.

Licentiate of Science (Technology) (Tekniikan lisensiaatti), University of Turku, October 2007, Field of Study: Microelectronics, Engineering, Major Subject: Computer Systems, Minor Subjects: Communication Engineering, System Circuits, Thesis: *On Designing Fault Tolerant Nanoscale Systems*.

Master of Science (Filosofian maisteri), University of Turku, November 2004, Training program: Electronics and Communication Technology, Major Subject: Communication Engineering, Minor Subjects: Physics, Computer Science, Mathematics, Thesis: *A Study of Methods for Testing Asynchronous Circuits*.

Secondary School Graduate (Ylioppilas), Mynämäen lukio, 1997.

3. Other education and expertise

Studies in University Pedagogics, 25 ECTS credit points, University of Turku, Faculty of Education, 2011.

Superior coaching, 10 work days, University of Turku personnel training / Tiedonvalo Oy, 2012.

4. Language skills

Finnish native language
English excellent
Swedish good
German basics

5. Current employment

Senior Research Fellow (Erikoistutkija), part-time 50%
University of Turku, Department of Computing, Faculty of Technology 1/2021–

Contact information:

University of Turku
Department of Computing
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CEO (Toimitusjohtaja) 5/2017–
Co-founder, Partner, 1/2016–
CTRL Reality Ltd

Contact information:

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Eerikinkatu 6b
FI-20100 TURKU
Finland
e-mail: teijo@ctrlreality.fi

6. Previous work experience

Senior Research Fellow (Erikoistutkija),

University of Turku, Department of Future Technologies 1/2017–12/2020

Senior Research Fellow (Erikoistutkija), University of Turku, Technology Research Center (TRC) 1/2014–12/2016

Senior Research Fellow (Erikoistutkija), University of Turku, Business and Innovation Development (BID), BID Technology 1/2011–12/2013

Senior Researcher (Erikoistutkija), University of Turku, Department of Information Technology 12/2009–12/2010

Researcher (Tutkija / Tutkijakoulutettava / Tohtorikoulutettava), University of Turku, Department of Information Technology / Turku Centre for Computer Science (TUCS) Graduate School 3/2005 – 11/2009

Researcher exchange:

University of Rochester, Department of Electrical and Computer Engineering, Rochester, NY, USA, 1.5.2008 – 31.7.2008

Visiting Researcher at the Embedded Integrated System-on-Chip (EdISon) Research Group lead by Professor Paul Ampadu.

7. Research funding and grants

SusCon: Sustainable Shipbuilding Concepts,

Principal Investigator (PI) and coordinator of the consortium,

2020–2022, funded by Business Finland,

parallel project with 1 research organization (VTT) and 5 companies,

research collaboration with University of Turku Centre for Collaborative Research and Finland Futures Research Centre;

total budget 3 Me, UTU budget 0.7 Me, total of 10 research, industry and other partners

SUSTIS: Sustainability and Transparency in Shipbuilding Networks,

Principal Investigator (PI) and coordinator of the consortium,

2016–2019, funded by the Finnish Funding Agency for Innovation Tekes and companies,

parallel project with 1 research organizations (VTT) and 7 companies,

research collaboration with University of Turku Centre for Collaborative Research and Finland Futures Research Centre;

total budget 3 Me, UTU budget 0.8 Me, total of 11 research, industry and other partners.

MIRACLE: Mixed Reality Applications for Culture and Learning Experiences,

Principal Investigator (PI) and coordinator of the consortium,

2015–2017, funded by the Finnish Funding Agency for Innovation Tekes and companies,

parallel project with 3 research organizations (VTT, University of Tampere, University of Helsinki),

research collaboration with University of Turku Department of Finnish History;

total budget 1.68 Me, unit budget 810 ke, total of 22 research, industry and other partners.

MARIN2: Mobile Mixed Reality Applications for Professional Use,

Principal Investigator (PI) and coordinator of the consortium,

2014–2017, funded by the Finnish Funding Agency for Innovation Tekes and companies,

parallel project with 7 companies,

total funding over 4 Me, unit funding 1.99 Me, total of 11 industry and other partners.

AgiSpacES: Agile Development Methods for Embedded Systems in Space Industry,

Principal Investigator (PI) and coordinator of the consortium together with Dr. Ville Rantala,

2014–2015, funded by the Finnish Funding Agency for Innovation Tekes and companies,

unit funding 0.30 Me, total of 7 industry and other partners.

Futuristic History - User-centric Mixed Reality Applications for Presenting, Recreating and Restoring Historical Events and Places,

Principal Investigator (PI) and coordinator of the consortium,

2013–2014, funded by the Finnish Funding Agency for Innovation Tekes,

parallel project with 1 research organization (VTT);

total budget 850 ke, unit budget 400 ke; total of 9 research, industry and other partners.

International research partner: Assistant Professor Teemu H. Laine, Ph.D., Department of Information and Computer Engineering, Ajou University, South Korea.

AgiES Agile and Lean Product Development Methods for Embedded ICT Systems,
Principal Investigator (PI) and coordinator of the consortium,
2012–15, funded by the Finnish Funding Agency for Innovation Tekes and companies,
parallel project with 1 research organization (Finnish Institute of Occupational Health) and 4
companies,

total budget 1.8 Me, unit budget 700 ke,
total of 14 research, industry and other partners.

International research partner: Associate Professor Norio Tokumaru, Dr. Econ., Graduate School of Engineering, Nagoya Institute of Technology, Japan.

MARIN: Mobile Augmented Reality Tool for Marine Industry,

Principal Investigator (PI),
2012–14; funded by the Finnish Funding Agency for Innovation Tekes and companies,
total budget 1.01 Me, total of 12 industry and other partners.

SensiLAB - Development Platform and Innovation Service for Industrial Demands,

Principal Investigator (PI), partner, project coordinated by Turku Science Park,
2012-15, funded by ELY and City of Turku,
total budget 450 ke, unit budget 254 ke.

Other partners: Turku University of Applied Sciences, Lappeenranta University of Technology,
Machine Technology Center Turku.

Fault Tolerant System Design - An Agile Method for Hardware Development and a Fault Tolerance Model,

2011–14, Academy of Finland postdoctoral researcher;
total budget 420 ke.

International research partner: Professor Paul Ampadu, Ph.D., Department of Computer and Electrical Engineering, University of Rochester, Rochester, NY, USA.

8. Research output

9 articles in international peer-reviewed journals
33 articles in peer-reviewed international conference proceedings and compilation works
3 monographs
3 national peer-reviewed articles
14 publications in university and department series
3 text books

9. Research supervision and leadership experience

Supervised PhD / D.Sc. (Tech.):

PhD Lauri Viinikkala (co-supervisor), Digitaalisia valheita vai historiallista tietoa? Aineellisen todellisuuden, kerronnan ja historiallisen tiedon suhde yhdistetyn todellisuuden teknologiaa hyödyntävissä menneisyyden esityksissä. (Digital lies or historical knowledge? The relationship between physical reality, narration and historical knowledge in representations of the past based on mixed reality technology). University of Turku 2019.

D.Sc. (Tech.) Ville Rantala (member of supervisor group)

On Dynamic Monitoring Methods for Networks-on-Chip, University of Turku 2012.

Other Supervised theses:

7 supervised M.Sc. (Tech.) theses since 2006
1 supervised M.Sc. theses since 2006
3 supervised B.Sc. (Tech.) theses since 2006

Leadership experience:

I have created, negotiated funding, acted as the principal investigator, and coordinated a number of research projects. The total budget of the projects exceeds 16 million euros, with nearly half of

which as funding to my research group. In my projects there have been totally about 100 collaborators: companies, other universities or other stakeholders.

I have worked as a superior at the University of Turku since 2012. The number of employees has changed over years with the maximum of some 30 people in my research group and over 20 direct subordinates.

I have worked 2012-2015 in the administrative tasks of a research unit. In 2012-2013 I was the vice head of BID Technology unit and responsible for following the financial issues. At the end the unit grew to almost 50 people with dozens of externally funded projects. During 2014-2015 I acted as the head of the Embedded and Mixed Reality Systems (EMRS) cost centre and vice-head of Technology Research Center (TRC) research unit. TRC was at its largest a unit of nearly 70 people and the EMRS was its largest group with some 30 people. From these years I have a wide experience on university administration such as general administration, yearly planning, budgeting, financial reporting, project financial issues, research administration, employment issues, facility management, etc.

10. Teaching merits

Studies in University Pedagogics, 25 ECTS credit points, University of Turku, Faculty of Education, 2011.

On-going courses:

Mixed Reality, University of Turku

Annually every Spring since 2018. Responsible teacher. Responsible for creating the course and the course material. Content based largely on research projects.

Other teaching experience:

5 times as a lecturer on a university course

8 times as a supervisor of exercises on a university course

Published study materials:

I have published textbooks from the research work which are used as a study material in various schools and universities. Especially the *Agile handbook for embedded systems development* has been reported to be used in various occasions. It still is one of the few books about agile methods written in Finnish. It has been delivered some 5 000 copies (paper + electronic version).

The *Miracle handbook: Guidelines for Mixed Reality Applications for Culture and Learning Experiences* was published in 2017 and it has been delivered some 1 500 copies (paper + electronic version). It has been used as study material in my own course and the other universities have also reported that they will use it in teaching.

11. Awards and honours

ISCAS 2007 Student Paper Contest: honourable mention and ranking in top 10 with paper *Fault Tolerance Analysis of NoC Architectures*. The competition had over 400 papers.

12. Other key academic merits

Referee for scientific publications:

I have done paper reviews for more than 20 different journals and conferences.

Administrative or working group positions in institutes of higher education:

Committee for the Development of Corporate and Public Sector Relations at the Faculty of Technology at University of Turku

Member 1.1.2021–31.12.2024.

Board of the Faculty of Mathematics and Natural Sciences at University of Turku

Deputy Member 26.8.2010 – 31.12.2010

Department Council of University of Turku Department of Information Technology

Member 1.4.2010 –31.12.2010.

Student deputy member 1.1.2002 – 31.12.2003.

Turku Centre for Computer Science (TUCS) board

vice member 19.4.2007 – 7.12.2009

Turku Centre for Computer Science (TUCS) Graduate School Committee

member 1.1.2006 – 31.12.2008, vice member 1.1.2009 – 7.12.2009

Department Council of University of Turku Department of Applied Physics

Student member 1.1.2001 – 31.12.2001

Turun yliopiston TEK-tutkijat ry

founder member, chairman 24.1.2007–31.12.2008, board member 1.1.2009–31.12.2012

Organising scientific conferences:**Mixed Realities 2017 - Finnish-Malaysian Mixed Reality Researcher Symposium**

Johor, Malaysia, 7.–8.6.2017

Supported by FinCEAL+

Organized together with Universiti Teknologi Malaysia MagicX and Imagineering institute.

Part of the organizing team, responsible leader of the Finnish project

ARea15 – Augmented Reality in Culture & Travel

Turku 11.-12.6.2015

The conference had some 100 participants.

Part of the organizing team and the Conference chair

13. Scientific and societal impact

The research group's results have been gathered to web page <http://ar.utu.fi> in a form to be read also by non-scientific audiences. The web pages include videos from many pilot applications, project summaries with videos and open source code and database publications from the projects. The projects are introduced with their own pages containing full list of partner organizations and press material.

Textbooks and reports for general public or target companies have been published. E.g. Agile Handbook for Embedded Systems Development, MIRACLE handbook: Guidelines for Mixed Reality Applications for Culture and Learning Experiences and more than 10 technical reports listed in the publications page (<http://ar.utu.fi/publications/>).

The projects have been actively promoted to representatives of media and I have given dozens of interviews to various newspapers, as well as radio and TV programs.

14. Other merits**Other positions and commitments:**

CEO (Toimitusjohtaja) 5/2017–

Co-founder, Partner, 1/2016–

CTRL Reality Ltd

CTRL Reality (<http://www.ctrlreality.fi>) is a spin off company from the research work done at the University of Turku since 2012. The company develops different kinds of Augmented Reality (AR) and Virtual Reality (VR) solutions for industry and cultural heritage. The company employs currently 12 employees.