

CURRICULUM VITAE - 17.12.24

Personal Details:

Name Tomi Tapani Heinonen
Address Rommontie 8
FIN-33400 TAMPERE, Finland
Date of Birth August 8th, 1968
Place of Birth Helsinki, Finland
Marital Status Married, one child
Nationality Finnish



Educational Qualifications:

- 1987** **Highschool Graduate**
Raumanmeren lukio, Rauma, Finland
- 1994** **Master of Science in Technology**
Tampere University of Technology, Tampere, Finland
Department of Electrical Engineering / Ragnar Granit Institute:
Biomedical Engineering, Software Engineering
Thesis: Three-Dimensional Presentation of Medical Images and Signals
- 1996** **Licentiate of Technology**
Tampere University of Technology, Tampere, Finland
Department of Electrical Engineering / Ragnar Granit Institute:
Biomedical Engineering, Measurement and Information Technology
Thesis: Segmentation and Presentation of Magnetic Resonance Images of the Brain
- 1999** **Doctor of Technology**
Tampere University of Technology, Tampere, Finland
Department of Electrical Engineering / Ragnar Granit Institute:
Biomedical Engineering, Measurement and Information Technology
Thesis: Applications of Magnetic Resonance Image Segmentation in Neurology
- 2003** **Docent**
Field: Biomedical Engineering / Image Processing
Tampere University of Technology, Tampere, Finland
Department of Electrical Engineering / Ragnar Granit Institute
- 2006** **Teacher / Pedagogical Qualifications**
Tampere Polytechnics / Teacher training (2 year course / 60 cu)
Qualification in teaching in Polytechnics / Vocational School
- 2010** **Pedagogical studies, Cum Laude -level**
Tampere University, Tampere, Finland
Qualification in teaching in Junior High School / Senior High School

Expertise Summary:

- Camera tuning (3A, ISP)
- Image quality analysis
- Camera lab management
- Systems architecture design and analysis
- Wired and wireless connectivity systems and communication
- Standardization
- SW Project management
- Technology management
- Long-term technology development
- Conducting technical research
- Writing scientific papers
- Writing technical specifications and white papers
- Teaching in university level
- SW engineering + programming (C/C++/Objective-C, Fortran, Assembler)
- Color processing and management
- Biomedical Engineering / medical image processing
- Visual systems (camera – imaging/video – graphics – display)
- Optimized SW algorithms and data structures
- Innovations and problem solving
- Common sense in technology

Language Proficiency:

Finnish native language
English fluent
Swedish working knowledge

Occupations:

- 3.1.2024 - **Cat's Pit forge**
Consultant
Working in a small company to identify possible product development ideas and finding subcontracting projects.
- 30.7.2020 - 2.1.2024 **Meluta Oy**
CTO
Working in a small company to identify possible product development ideas and finding subcontracting projects.
- 9.1.2012-30.6.2019 **Intel Corporation**
Imaging Engineer
Working with latest Intel imaging HW/SW in order to achieve best possible image quality. Also co-operation with the Intel customers. Creating online courses and teaching fundamentals of digital imaging, camera tuning, and tuning tools. Managing a camera laboratory
- 31.5.2001-08.1.2012 **Nokia Corporation**
Principal Engineer 1.12.2010 – 8.1.2012
Arranging and heading architecture studies for 3D Imaging, HDR, etc.
- Principal Architect 1.6.2009 - 31.11.2010**
Arranging and heading architecture studies and specifications in Display and Graphics Domain. Chairing USB AV standardization activity in USB Technical Working Group.
- Senior Technologist 1.6.2008 - 31.5.2009**
Visual Area Technology Management (Visual TAM) for Application Processor. Carrying out technology development with Nokia partners (i.e., Texas Instruments, ST Microelectronics, Infineon, Broadcom). Specifying new requirements and solutions to certain visual area systems. Heading the USB Video Display –class standardization.
- Senior Specialist 1.4.2003 – 31.5.2008**
Research, Analysis, design and Requirement Management of Visual System Architecture of Application Processors / Chipsets. Contribution to visual architecture and roadmaps, co-operation between various imaging units and technological key persons inside Nokia. Co-operation with Nokia Partners (TI, ST, IFX, BC).
- Technology Manager 31.5.2001 – 31.3.2003**
Technology management in Nokia's Bluetooth Access Solutions program. Involved research and decision making in applied technology and standards, representing Nokia in Bluetooth standardization, specification for new technology and standards, IPR-activities, and heading a SW team.
- 1.4.2000 - 30.5.2001 **Acta Systems Ltd.**
Vice President
Management of Acta System's Tampere branch. The task included numerous steps in order to employ personnel, start business, and lead projects. Acta's business activity includes software engineering and product development in biomedical information technology. Acta Systems is specialized in PACS, Object technology and Components.
- 1.4.1999 - 31.3.2000 **Patria Finavitec Oy Systems**
Project Manager
Project Management, Software Engineering, and Product Development associated with wireless communication (Bluetooth), WAP technology, device drivers, and Java. The company is specialized in space technology, aeroplane construction, defence technology, and testing and communication products.
- 1.4.1994 - 31.3.1999 **Tampere University of Technology**
Ragnar Granit Institute / Researcher 1.1.1997 - 31.3.1999

Research projects and software engineering dealing with medical image processing in NeXTstep, Windows95 and WindowsNT environments using Objective-C, C, and C++ languages. The project produced several software, which have been reported in scientific journals. The software were also applied in clinical environment and research. Doctor's degree was obtained.

Tampere University Hospital / Project Engineer 1.8.1996 - 31.12.1996

Research and software development on multimodal imaging (Windows NT and C language) in an university hospital. The project produced Windows software capable of visualizing EEG signal and MR images simultaneously as a 3D brain map. The software was developed for the department of clinical neurophysiology.

Ragnar Granit Institute / Researcher 1.4.1994 - 31.7.1996

Research and software development associated with 3D computer graphics in Sun/X-windows environment using C language. The project produced a fast triangulation algorithm and efficient 3D visualization software, including different projection and shading methods. Master and Licentiate degrees were obtained.

1989-93

United Paper Mills Ltd.

Part-time Software Engineer

Programming and software engineering in VAX/VMS, PDP/RISX, and PC/MS-DOS environments using Basic, Fortran, Macro-11-Assembler, and C-language. The developed software were associated with paper factory automation, data communication, process control, and process monitoring. Total 20 months.

1985-88

Rauma-Repola Oy

Part-time Mechanic / Electrician trainee

Mechanical and electrical maintenance/construction work, and fork truck driving in a large pulp and paper factory. Total 18 months.

Secondary Occupations:

1.4.2007 – 31.12.2008

Tampere University Hospital: Regional Imaging Center / Researcher

Participating a research project on tissue characterization, steering researchers, planning research topics, preparing scientific papers, specifying image analysis SW requirements.

1.4.1999 -

Tampere University of Technology / Ragnar Granit Institute / Lecturer / Docent

Lectures on Biomedical Engineering, Medical Imaging, Image Processing, 3D Computer Graphics, and Wireless Communication Technologies.

1.9.2002-31.12.2006

Tampere Polytechnics / Lecturer

Giving a course on Bluetooth Technology and other short-range wireless technologies (twice a year).

1.8.1998 – 31.3.2003

Medimag Oy / Managing Director

Leading a small company towards commercialising medical image processing applications associated with segmentation, 3D visualization and multimodal visualization. In addition, the company carries out research and volumetric MR/CT image analysis for private and university hospitals and research centers.

Standardization Activities:

- Bluetooth Special Interest Group (SIG) Member – Nokia Representative in Personal Area Network (PAN) working group / Access Point Roaming (APR) subgroup.
- UMA (unlicensed mobile access) Consortium. Nokia member in preliminary requirements review and planning.
- USB Standardization Technical Working Group / Chairing the USB AV class standardization activity.

Academic Activities:

Membership in Scientific Societies

- 1995-** Finnish Society for Medical Physics and Biomedical Engineering, Member
1995- International Society for Bioelectromagnetism, Founder Member

Referee Activities in Scientific Journals

Medical & Biological Engineering & Computing, Peter Peregrinus Ltd.
Computer Methods and Programs in Biomedicine, Elsevier Science Ltd.
IEEE Transactions on Medical Imaging

Referee Activities in International Conferences

European Signal Processing Conference 2000, Tampere, Finland

Editorial Activities

- 1999** International Journal of Bioelectromagnetism, vol. 1, num. 1, editor.

Invited Talks

- 1997** Image Segmentation and Applications in Medicine, Nanyang Technological University, Biomedical Research Center, Singapore
1999 Application of MR image segmentation, 6th Ragnar Granit Symposium, Tampere, Finland
2001 Future Radiological Diagnosis, IT –teknologia terveysteollisuuden työkaluksi –valmennusohjelma, Medipolis, Oulu, Finland
2001 Voxel Based Segmentation of Medical Images, Joint 8th Ragnar Granit Symposium and 1st CSC Scientific Meeting, Helsinki, Finland

Teaching Activities in Tampere University of Technology

- 1995-1997** Biomedical Engineering Laboratory Course I, Part time lecturer
1997 Introduction to Medical Information Systems, exercises
1996-1998 Biomedical Engineering Laboratory Course II, Part time lecturer
1998 Medical Imaging Methods, Part time lecturer
1998,1999 Processing of Medical Images, Part time lecturer
2000- Processing of Medical Images, lecturer
2001- 2003 Processing of Medical Images, exercises
2002-2005 Telemedicine, lectures for Bluetooth and Telemedicine
2003-2005 Digital Mobile Communication Systems, lectures for Bluetooth technology

Teaching Activities in Tampere Polytechnics

- 2002-2006** Short Range Radio Systems and Bluetooth Course, lecturer (two courses / year)

Other Teaching Activities

- 1998** 3D computer graphics, Instrumentarium Imaging - Edutech / Image Processing Seminar, Finland
2001 Medical Image Processing, Medipolis Workshop, Oulu, Finland

Referee and Instructor Activities

- 2000** Mika Räisänen: Compression of Medical Images for Storage Purposes, Master of Science Thesis, Tampere University of Technology, Tampere, Finland.
2002 Jarkko Tulkki: Development of Quantitative Methods for the Follow-up of Tumour Treatment, Master of Science Thesis, Tampere University of Technology, Tampere, Finland
2008 Leena Näppi: Seating pressure measurement for individual seat design, Licentiate thesis, Tampere university of technology, Tampere, Finland.

Attended Conferences and Short Courses:

<i>Attended International Conferences</i>	
1996	10 th Nordic Baltic Conference on Biomedical Engineering, Tampere, Finland
1997	Medical Imaging / SPIE, Newport Beach, USA
1997	9 th International Conference on Biomedical Engineering, Singapore
1998	4 th Congress of Nordic Society for Research in Brain Ageing, Tampere, Finland
1999	Medical Imaging / SPIE, San Diego, USA
1999	WAP Developers Symposium, San Francisco, USA
1999	11 th Nordic Baltic Conference on Biomedical Engineering, Tallinn, Estonia
1999	6 th Ragnar Granit Symposium, Tampere, Finland
1999	Bluetooth Conference (IBC Euroforum), Stockholm, Sweden
1999	Bluetooth Developers Conference, Los Angeles, USA
2001	Medical Imaging 2001 / SPIE, San Diego, USA
2001	Bluetooth World Congress, Monaco
2002	Bluetooth All Hands Meeting, Los Angeles, USA

<i>Attended Courses (1999 -)</i>	
1999	Image Processing, Edutech, Tampere, Finland
1999	Java-programming, Edutech, Tampere, Finland
1999	WAP-programming, Fsc Partners, Tampere, Finland
1999	Modern Project Management, Projekti-instituutti, Helsinki, Finland
2000	SA/SD and UML, InSoft Oy, Tampere, Finland
2000	Merchantable Client Service, Mercuri International, Hämeenlinna, Finland
2001	Nokia Bluetooth Training, Oulu, Finland
2002	3G Basics / Nokia, Tampere, Finland
2002	GSM System Training (SYSTRA) / Nokia, Espoo, Finland
2002	All-IP Overview / Nokia, Tampere, Finland
2002	TCP/IP course, Tampere, Finland
2003	Executive presentation on Systems Engineering and Integration, Tampere, Finland
2003	Systems Engineering: Requirements, Architecture and Design, Helsinki, Finland
2003	Video Coding and Applications, Tampere, Finland
2004	Specialist in Nokia Mobile Phones, Helsinki, Finland
2004	Symbian OS Overview, Digia, Tampere, Finland
2006	Visual Image Quality, Tampere, Finland

Research Grants:

1995	Emil Aaltonen Foundation	FIM 30000.00	(5042€)
1995	Instrumentarium Science Foundation	FIM 20000.00	(3361€)
1996	Ulla Tuominen Foundation	FIM 30000.00	(5042€)
1996	Jenny and Antti Wihuri Foundation	FIM 35000.00	(5882€)
1996	Tampere University of Technology	FIM 8000.00	(1344€)
1996	Ragnar Granit Foundation	FIM 3000.00	(504€)
1997	Emil Aaltonen Foundation	FIM 20000.00	(3361€)
1997	Finnish Cultural Foundation	FIM 35000.00	(5882€)
1997	Ragnar Granit Foundation	FIM 2800.00	(470€)
1998	Foundation for Technology	FIM 20000.00	(3361€)
1998	Ragnar Granit Foundation	FIM 2800.00	(470€)
1998	Tampere Science Foundation	FIM 4000.00	(672€)
1999	Instrumentarium Science Foundation	FIM 20000.00	(3361€)
1999	Finnish Cultural Foundation	FIM 42000.00	(7058€)
1999	Tampere University of Technology	FIM 10000.00	(168€)
1999	Ragnar Granit Foundation	FIM 3200.00	(537€)
1999	Tampere Science Foundation	FIM 6000.00	(1008€)
2001	Ragnar Granit Foundation	EUR 300.00	
2003	Ragnar Granit Foundation	EUR 200.00	

Some achievements:

- Tuning camera systems in numerous product projects in order to meet customer expectations (i.e., laptops, tablets, and phones).
- Preparing color processing guidelines for Nokia corporation.
- Arranging and conducting long term technology development between Nokia, IFX, Broadcom, Texas Instruments, and ST Microsystems (ST Ericsson).
- Setting visual area requirements and carrying out technical analysis for several HW platforms in Nokia products.
- Solving numerous technical challenges in Nokia HW/SW environment.
- Developing efficient data structures and algorithms for image processing, segmentation, visualization, and rendering (2D and 3D).
- Analyzing and proposing camera/display processing entities and partition for several Nokia HW/SW platforms that were applied in Nokia products.
- Identifying architecturally significant performance risks and bottlenecks for visual systems – forming first template in Nokia to be applied in analyzing proposed HW/SW platforms.
- Standardization activities
 - Bluetooth Special Interest Group (SIG) Member – Nokia Representative in Personal Area Network (PAN) working group / Access Point Roaming (APR) subgroup.
 - UMA (unlicensed mobile access) Consortium. Nokia member in preliminary requirements review and planning.
 - USB Standardization Technical Working Group / Chairing the USB AV class standardization activity.
- *Numerous Patents*
 - *Member of TOP100 inventors in Nokia Corporation. Defending Nokia IPR in Apple/Nokia litigation.*
 - *76 granted patents in wireless communication, radio networks, self organizing networks, user interfaces, biomedical engineering, and camera systems.*
- *Lots of academic activities (i.e., memberships, referee activities, instructor activities, invited talks, teaching activities, organizing scientific research, interdisciplinary co-operation, forming new university courses and lectures, etc)*
- *Creating online courses for Fundamentals of digital imaging and camera tuning.*
- *Docent of Biomedical engineering / Medical image processing*
- *19 research grants during years 1995 – 2003 (about 50000e)*
- *Numerous scientific publications (77)*
 - *4 theses*
 - *24 articles in refereed international scientific journals*
 - *15 short papers in refereed international scientific journals*
 - *22 International conference papers and abstracts in conference proceedings*

Recreations and hobbies during the years...

Astronomy, science fiction, aquarium, oil painting, music, out-door activities, archery, silhouette shooting, boating, fishing, down-hill skiing, gardening, travelling, carpentry, metal works / black smithing, photography, motorbikes, etc...