

# Tom Ahola

I'm male, born 1968 in [Vaasa, Finland](#).  
I have a Licentiate of Technology degree with honours  
I'm currently working for [Suunto](#), in [Vantaa](#).



## CONTACT

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# CV

## AMBITION

I enjoy working with a team of motivated and skilled people to create technology or products that give a great experience for customers and thus good business for the company.

## EDUCATION

1993-1996 [Helsinki University of Technology \(TKK\)](#). Licentiate's degree with honours.  
1987-1993 [Helsinki University of Technology \(TKK\)](#). Master's degree with honours.  
1985-1987 [Vasa Övningsskolas Gymnasium High School](#) Laudatur (praised excellent, top 5%).

Only around 1% of the best university students graduated with honours. TKK later transformed and is now part of [Aalto University](#). My topics at the university were electronics, signal processing and measurement science. The Licentiate's degree includes all the studies for a PhD degree. I have also published enough scientific publications. Only difference is the PhD dissertation, for which I have not had interest, as I value true skills and experience over academic titles.

## LANGUAGE SKILLS

Swedish and Finnish: native bilingual

English: excellent

## TECHNICAL SKILLS IN BRIEF

- ✓ Top class expert in digital signal processing and algorithms
- ✓ Measurement system design, including sensing, signal conditioning and analysis
- ✓ Long experience with sensor platforms for digital compass and orientation/motion sensing
- ✓ Electronics design, analog and digital, including high speed design
- ✓ RF and wireless communications
- ✓ Interaction system architecture and user interface design
- ✓ Software development. Embedded systems and PC desktop - some mobile apps too.
- ✓ Experienced system architect for low power and high reliability embedded systems
- ✓ Mapping and navigation systems development

## PERSONAL QUALITIES

I like to share my vast experience in an exceptionally broad technical field. I enjoy helping others to achieve a common goal, more than collecting personal achievements. I always have a clear vision how to solve challenges and create optimal solutions. Due to my experience and level of consciousness, I can often foresee and avoid problems, but if problems arise, I can usually quickly work out a solution. I learn new things fast and I'm a forward going innovator with a novel and fresh individual approach. I have a deep devotion to technology and creativity, but I am not too geeky. I don't do technology for the sake of technology but for the sake of making the life of people more easy and enjoyable. Thus, usability and pragmatic functionality are very important design criteria for me, not forgetting aesthetic qualities and a high technical performance.

I'm also a very hands-on person and can create prototypes to demonstrate technology and new concepts. I feel that a broad understanding of architecture, design, technology, usability and implementation is very essential for a rapid development cycle of successful products as it reduces iterations of product development and the end result is of higher quality. I have consciously developed my skills in this direction.

I also have great project management and leadership skills partly inherited from relatives who lead businesses from small to large. At Nokia I was very successful planning a large interaction research program. In nearly all my other roles I have also done task and financial planning and documenting of my projects. In my freetime as a kayaking guide and lead trainer I have led large groups of people successfully through rough weather and have been able to make the trips enjoyable for all by taking into consideration every individual and planning the trips accordingly. I have received very positive feedback from attendants. I'm a good listener and can make correctly timed decisions based on objective observations that optimize the total outcome. However, I have often opted out from taking leadership roles as I have preferred working more closely and hands-on with the technology as an expert. But lately I have felt that I might be even more useful in a manager role, sharing my experience and guiding others. As an employee I am humble and value the views of my superiors, doing my best to achieve set targets and go even beyond that to add value, quality and futureproofness. Coming from the Ostrobothnia region of Finland, I have inherited qualities known to the region: being honest, open, direct and executing tasks without unnecessary delays.

## **WORK EXPERIENCE IN BRIEF**

### **1993 Research Scientist and Lecturer at [Metrology Research Institute](#) (5 Years)**

- ✓ Optical frequency standard system development

### **1999 Senior Engineer at [Nokia](#) (13 years)**

- ✓ 1999 Mixed signal ASIC measurement system development
- ✓ 2005 Mixed signal research engineering
- ✓ 2007 Wellness and healthcare sensor platform architect
- ✓ 2009 Multimodal interaction, program manager and system architect
- ✓ 2011 Sensor fusion technology development
- ✓ 2011 Technology manager for magnetic components

### **2012 Senior Software Engineer at [Suunto](#) (current position)**

- ✓ Technology development

## **POSITIONS OF TRUST**

- ✓ Member of the board of directors of Vaasan Saaristopalvelut Oy
- ✓ Safety Supervisor in Nokia Ruoholahti Office
- ✓ Chairman of Nokia Paddling Club
- ✓ Founding member of Finns for the Whales society

**TECHNICAL SKILLS IN MORE DETAIL**

- ✓ Digital signal processing (DSP) and algorithm design (for audio, video, wireless communication, sensor processing, measurement analysis, process control)
- ✓ Analog electronics design (audio, power, RF, radio, precision measurement circuits, ...)
- ✓ Digital electronics design (high speed interfaces, processors, logic, FPGA, etc)
- ✓ Sensor platform technology (sensing architecture, algorithms, calibration, digital compass, motion sensing, orientation sensing, measurement systems)
- ✓ Mixed signal design (high speed, low noise and precision systems for communication or measurement)
- ✓ C, C++, Java, Pascal and Assembly languages in Embedded, Windows and UNIX/Linux/Maemo/Meego/Android systems
- ✓ Qt and QML/Qt Quick
- ✓ User interface and interaction design, system architecture design for interaction
- ✓ Product concept design (SW/HW/Web architecture, UI design, power management, mechanics)
- ✓ Sound synthesis and processing, Speech recognition, 3D audio
- ✓ Image processing, motion detection and pattern recognition
- ✓ Linux kernel module programming
- ✓ TCP/IP network programming (Windows and UNIX/Linux)
- ✓ Native programming of audio interfaces for efficient audio I/O
- ✓ Test and measurement automation
- ✓ Agilent VEE, LabVIEW and Pure Data (PD) visual programming
- ✓ Printed circuit board design (low noise mixed signal, high speed digital, etc)
- ✓ Mixed signal ASIC design for testability (DFT)
- ✓ VHDL hardware description language
- ✓ Linux workstation & server administration (Fedora, Ubuntu, Apache)
- ✓ 2D and 3D Computer Graphics, animation and mechanical designs (3D Studio MAX, Blender, POV-ray, Corel, Gimp, Inkscape, Draftsight)
- ✓ Video editing and color correction (Vegas Pro, Adobe Premiere, kdenlive, Kino, FFmpeg, VirtualDub)
- ✓ Web publishing, JavaScript, CSS, HTML5
- ✓ Document creation and presentations (TeX, LaTeX, Microsoft Office, LibreOffice)

**IT SKILLS**

- ✓ Windows, Linux (Fedora, Ubuntu) - daily user and administrator of several systems, expert user helping others, implementing services and work-efficient scripts
  - ✓ Firefox, Internet Explorer - daily user, expert user helping others
  - ✓ Microsoft Office - daily expert user of Outlook, Word, Powerpoint, Excel, Communicator, Livemeeting
  - ✓ LibreOffice - frequent user and knowledge sharer
  - ✓ TeX Live and tools - frequent professional use for scientific publications
  - ✓ Matlab, Octave, Gnuplot, Agilent VEE, LabVIEW - have used extensively, expert user, knowledge sharer
  - ✓ Qt Creator - using extensively, expert user, knowledge sharer
  - ✓ Borland C++ Builder - have used extensively in the past, expert user, knowledge sharer
  - ✓ Microsoft Visual Studio – have used professionally
  - ✓ MPLAB - have used extensively and professionally, knowledge sharer
  - ✓ IAR Embedded Workshop - have used extensively for product dev, knowledge sharer
  - ✓ Silicon Labs Simplicity Studio – have used for some projects, knowledge sharer
  - ✓ Nordic Semiconductor nRFgo Studio – have used professionally
  - ✓ ARM Keil – have used for evaluation projects
  - ✓ STM32CubeMX – have used for evaluation projects
  - ✓ NXP MCUXpresso – have evaluated
  - ✓ Atmel Studio – have evaluated
  - ✓ CodeSourcery tools - have used successfully
  - ✓ PADS - have used extensively and professionally, knowledge sharer
  - ✓ KiCAD – have used for some designs
  - ✓ Altera Quartus II - have used extensively and professionally, knowledge sharer
  - ✓ Xilinx ISE, Lattice ispLEVER, Actel Libero- have used successfully
  - ✓ APlac, PSpice, NEC, CST - have used professionally
  - ✓ Puredata, SuperCollider, CSound - have used successfully
  - ✓ Corel Draw, Corel Photopaint, Gimp, Inkscape - near daily user, knowledge sharer
  - ✓ Adobe Photoshop, Illustrator, Premiere - have used successfully
  - ✓ Vegas Pro Video and DVD Architect - frequent professional expert user, knowledge sharer
  - ✓ Sonar (multitrack audio workstation) - frequent professional expert user, knowledge sharer
  - ✓ 3D Studio MAX - have used extensively, knowledge sharer
  - ✓ Blender, POV-ray - have used successfully
  - ✓ Draftsight – have used extensively
  - ✓ Bentley Microstation - have used extensively in the past
  - ✓ AutoCAD - have used very little
- + many other - I always learn quickly to use software beyond normal functions and can develop my own software quickly too

## WORK EXPERIENCE IN DETAIL

**May 2012 - present**

**[Suunto](#), Helsinki**

**Senior Software Designer**

**Manager: Satu Rahkonen and previously Jyrki Uusitalo**

I have a very inspirational role developing new technology which will bring Suunto customers exciting and valuable new features to awesome products now and in the future. I have mostly worked with technology for dive products but will also contribute to other amazing products. In this role I'm doing a broad range of design tasks, involving digital signal processing (DSP), algorithms, digital communications systems, system design, technology research, electronics, mechanics and one of my favourites, design of new interaction methods and systems. Part of my work is SCUBA test-diving of our new products. My first project was the development of the underwater wireless communication technology for the Suunto Tank Pod pressure transmitter. It has proven very successful and is praised by customers. The novel easy pairing interaction method for the Tank Pod is my invention.

**November 2011 – May 2012**

**[Nokia](#) / Nokia with Windows Phone Technology / Multimedia / Sensors & Inputs, Helsinki**

**Senior Engineer**

**Manager: Jukka Salminen**

In this role my responsibility was to provide Nokia expertise in magnetic sensors as a technology manager. I supported phone programs with sensor integration, helping every Lumia phone get the best possible components and design. I discussed technology and component development with sensor vendors and made specifications for new component development. I also developed sensor algorithms and sensor drivers and contributed to an energy efficient sensor processing architecture.

**August 2011 – October 2011**

**[Nokia CTO](#), Helsinki**

**Senior Engineer**

**Manager: Mika Grundström**

**Project leader: Hannu Vilpponen**

I transferred to CTO from Research to focus more strongly to productize sensor algorithm technology. As sensors are becoming a key feature and commodity of mobile devices the algorithm technology is a key technology to differentiate from the competition. The technology also enables new and potentially disruptive interaction paradigms. The work was rewarding and progressed very well but was shortly disrupted by an organizational change.

**January 2009 – July 2011**

**[Nokia Research Center](#), Tampere Laboratory, Multimodal Interaction Team, Helsinki**

**Senior Researcher**

**Team leader: Vuokko Lantz and Viljakaisa Aaltonen as substitute in 2010**

In this team I have participated in advanced research of new interaction methods and user interfaces. I was a program manager for a large program with many collaborative projects with established research organizations to research and develop state of the art interaction methodologies. I was able to utilize my expertise in sensors and signal processing in developing new touch and gestural interfaces. My skills in sound synthesis and computer graphics I enjoyed to utilize in development of audio-visual and haptic feedback. My skills in measurement science have been useful to help development of touch latency measurements. In an exploration project I developed a module for face recognition using my skills in image recognition. For a short time I also helped out another team working with near field communication (NFC) technology. Our Raja-performance has received high visibility, shown in Tampere Innovation experience, Nokia foundation awards ceremony in Helsinki and Agency of Change in London. For this interactive multimedia dance performance I implemented the sensor performer Qt application and the computer visualization.

**January 2007 – December 2008**

**[Nokia Research Center](#), Connectivity Applications System Research, Wellness and Healthcare Team, Helsinki**

**Member of Research Staff**

**Team leader: Jukka Salminen**

In this role I developed hardware and software for the Nokia Wrist-Attached Sensor Platform (NWSP), which is an FPGA based open-source wireless and wearable R&D platform. The platform is used in collaboration with Universities and research institutes. I also contributed to [Continua Health Alliance's](#) Activity Monitor Specification, Bluetooth Low Energy Technology, Nokia [Sports Tracker](#), Nokia Step Counter and Nokia Wellness Diary. For Nokia Step Counter I implemented a power saving scheme that allows it to be left on continuously tracking activity without draining the battery too much.

**January 2005 – December 2006**

**[Nokia Research Center](#), Computing Architectures Lab, Mixed Signal Electronics Team, Helsinki**

**Senior Research Engineer**

**Team leader: Pertti Tolonen**

In this role I worked with various research topics such as mobile lightning detection and sensor algorithms. I developed software to record and analyze signals received by lightning detectors. The application featured up to 10 input channels, accurate time synchronization using GPS and remote operation and monitoring using cellphone SMS messages. I also developed a standalone miniature lightning detector prototype based on a low power microcontroller. In an affective communications exploration project I worked with robotics and tangible communication devices.

**January 1999 – December 2004**

**[Nokia Research Center](#), Electronics Lab, Analog and Mixed Signal IC Design group, Helsinki  
Senior Research Engineer  
Team leader: Jukka Wallinheimo**

In this role I was responsible for the development of the testing and characterization system for ASIC prototypes. This system consisted of several racks of commercial test equipment and equipment designed and built by myself. I implemented advanced automated test programs, measurement analysis algorithms and reporting software networked on Linux and HP/Agilent VEE, National Instrument's LabVIEW and C++. I also contributed to the ASIC design with circuit ideas and design for testability issues. After we developed a sensor interface chip I developed sensor algorithms for Nokia's first compass phone. I took part in the project making Nokia's first 3G cellphone too. There we made the baseband converter.

**1993 – December 1998**

**[Metrology Research Institute \(MRI\) at Helsinki University of Technology \(TKK, currently Aalto University\)](#), Espoo (next to Helsinki).  
Research Scientist, Lecturer  
Professors: Erkki Ikonen, Pekka Wallin**

In this role my projects included development of a digital control system for iodine stabilized lasers (DiLS) used as the national optical frequency standard of Finland. One system was also built for the [BIPM](#), which is the European central laboratory of standard measures. The system included a microcomputer system, a DSP unit, embedded software, DSP algorithms and precision analog electronics. The relative uncertainty of the frequency standard can be below 0.0001 ppm. I also worked with optical power measurements and teaching students in the field of measurement science.

**PRE-GRADUATION WORK EXPERIENCE**

- ✓ Radio technician assistant at Radio Jyväskylä Local Radio Station
- ✓ Developed database reporting software for music playlists at Radio Jyväskylä
- ✓ Advertisement graphics work at Mainos Mikko Koo, Vaasa
- ✓ Various warehouse administrative work at one of our family enterprises: Edustusliike Juhani Ahola Oy, Vaasa



## SOME OF MY LEISURE ACTIVITIES AND INTERESTS

✓ Kayaking

As a chairman of the board of Nokia Paddling Club and by leading paddling trips as a certified class-1 canoeing guide I have experience of leading people. I also act as a lead trainer and my courses have received high ratings.

✓ Arts and Media

I'm a composer and performer of music, member of Gramex and Teosto and a keen sound designer. I design and build electronic and electro acoustic instruments. I express myself visually by photography, [video](#) and computer 3D graphics and animation. I actively attend workshops such as sound design for film and color correction. I follow the latest in video technology and design some of my own equipment. I have also done web design for various societies and companies.

✓ Radio communications

I have a Radio Amateur license and operate station OH2FRM. In addition to improving skills of fluent global communication and building radio equipment I'm interested in digital data transmissions, position reporting and radio navigation. In NORA ry, the Nokia Radio Amateur Club, I was in a team setting up a Winmor link station for digital communications, important for security communications during disasters where normal communication infrastructure may be disabled. I designed a horizontal loop antenna for 160m and 80m bands.

✓ Fitness and environment

I like hiking, cycling and swimming in addition to kayaking. Geocaching makes me explore strange new places. I keep my mind sharp and body in good condition by practicing yoga. I follow a vegetarian diet to minimize health risks and environmental impact. I don't smoke or drink alcohol, which keeps me young and retains my ability to learn and understand new things well. I'm very environmentally conscious and try to live in a smart sustainable way.

✓ Diving

When starting work at Suunto, I was offered training in SCUBA diving. I have the PADI AOWD license and enjoy testing new Suunto dive hardware and software prototypes as a test diver. Naturally I have also extended my videography interest to the underwater environment.

## REFERENCES

- ✓ <https://www.linkedin.com/in/tomahola>
- ✓ <http://tomahola.com>