

# Simon Holmbacka. PhD – Resume

13 July 2016

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## CONTACT INFORMATION

Embedded Systems Laboratory  
Faculty of Science and Engineering  
Åbo Akademi University, Finland

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Gender: male  
Time of birth: 24.01.1986  
Place of birth: Jakobstad, Finland  
Nationality: Finnish



## POSITION

### Post-Doc Researcher

Åbo Akademi University Finland. Faculty of Science and Engineering,  
Embedded Systems Laboratory.

Task: *Post-doc research and teaching*

### Wissenschaftlicher Mitarbeiter

Fernuniversität in Hagen, Germany. Lehrgebiet Parallelität & VLSI

Task: *Post-doc research and teaching*

January 2016 –

September 2015 –

## EDUCATION

### Åbo Akademi University, Finland

*Doctor of Technology in Computer Engineering (26 Jan. 2016, Turku, Finland)*

2011 – 2015

- Faculty: Science and Engineering
- Major: Embedded Computer Systems
- Minor: Software Engineering
- Minor: University Pedagogics
- Thesis: *Energy-Aware Software for Many-Core Systems* **Grade:** Honorary Grade
- Reference: Prof. Johan Lilius [johan.lilius@abo.fi](mailto:johan.lilius@abo.fi)

*Master of Science in Computer Engineering (31 Mar. 2011, Turku, Finland)*

2009 – 2011

- Institution: Information Technologies
- Major: Embedded Computer Systems
- Minor: Control Engineering
- Minor: Software Engineering
- Thesis: *Task Migration in Virtualized Multi-Core Real-Time Systems* **Grade:** 5/5

*Bachelor of Science in Computer Engineering (6 Oct. 2009, Turku, Finland)*

2006 – 2009

- Institution: Information Technologies
- Major: Embedded Computer Systems
- Minor: Software Engineering

## ABOUT ME

I come from the small city of Jakobstad in the mid west of Finland from which I moved to Turku to study computer engineering in 2006. I completed my Master's degree in 5 years (2006 – 2011) and my PhD in 4 years (2011 – 2015) from Åbo Akademi University in Turku, Finland.

### Technical

I have worked extensively in the areas of embedded systems, runtime systems, power management and many-core platforms, which includes foremost low level system programming (usually in C). Furthermore I have experience in object oriented programming languages, mostly C++ and Java, and I have of course stumbled upon some Python, C#, .net, VB, Java script, xml and assembly programming. I have worked with system modeling, mathematical optimization and control theory including NLP optimization, digital filtering, plane fitting methods, control theory and its underlying mathematics. This means that I have very good knowledge of Matlab, its toolboxes and system simulation in Simulink. On the hardware side, I have excellent knowledge of ARM and Intel platforms in particular, and system/kernel programming using Linux. I have been hacking with the Linux kernel since I was 16 years old and know this world in and out. From my PhD work, I created an Android app called “Low Energy Player” freely available on Google Play. On further lower level I have worked with real-time operating systems like FreeRTOS during my PhD and I have also build many hobby projects from scratch using micro controllers such as an audio synthesizer complete with a midi interface and USB driver running on an 8-bit AVR.

## Project Work

In the 4 years of making my PhD I have published over 15 international peer reviewed scientific articles, one of which I received the best paper award for in 2014. I worked in the European FP-7 project RECOMP from 2011 – 2014 and in the national Tekes project ParallaX from 2014 – 2016, in which I worked together with universities and international IT companies like Wittenstein ltd., UK and Seven Solutions, Spain on programming and integration tasks. I am a very good team worker, which has shown in co-operations with 7 different universities in 4 countries during this time for my thesis, and outside of my thesis I have published work together with 12 different institutions and co-authored work together with over 30 people. I have visited more than 30 countries in my thesis work, and I find it very easy to join a team and start working on new projects with new people.

## Languages



- Swedish: Mother tongue
- Finnish: Conversational
- English: Fluent
- German: Conversational

## Pedagogics

Education wise, I have been lecturing university courses in English since 2013 and completed university pedagogics as a minor subject. I created an online education MooC on coursera.org from scratch in the EIT Digital project in 2015 and 2016, which is now freely available on Coursera and has over 2500 active students.  
<https://www.coursera.org/learn/real-time-systems/>

## About Simon

I would describe myself as a person who takes the initiative and gets things started. I have a very good working discipline with regard to time and responsibility, and *I always do the work today instead of leaving it until tomorrow!* I always start a task well on time, and I keep the promised timelines whether it is a question of delivering C code, an article, a presentation, course material or a PhD thesis.  
My hobbies – besides embedded systems hacking – are traveling, gardening, skiing, hiking and workout.

## TEACHING EXPERIENCE

<b>Course creator and lecturer:</b> EIT Digital Online Coursera <i>Development of Real-Time Systems</i> <a href="https://www.coursera.org/learn/real-time-systems/">https://www.coursera.org/learn/real-time-systems/</a>	<b>Spring 2016</b>
<b>Advisor and examiner for thesis work:</b> Åbo Akademi University <b>Prüfer für Abschlussarbeiten:</b> FernUniversität in Hagen	<b>2012 – 2016</b> <b>2015 – 2016</b>
<b>Course lecturer:</b> Real-Time Systems Åbo Akademi University	<b>Spring 2016</b>
<b>Course assistant:</b> Multimedia Algorithm Implementations Åbo Akademi University	<b>Spring 2016</b>
<b>Course lecturer:</b> Real-Time Systems Åbo Akademi University	<b>Spring 2015</b>
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<b>Course lecturer:</b> Real-Time Systems Åbo Akademi University	<b>Spring 2012</b>
<b>Course assistant:</b> Real-Time Systems Åbo Akademi University	<b>Spring 2011</b>

## RESEARCH VISITS

<b>Rennes 4 month research visit</b> Location: Rennes, France Institution: Institut national des sciences appliquées de Rennes Host: Maxime Pelcat, ITER Laboratory Duration:	<b>November 2013 - March 2014</b>
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## JOINT- COOPERATION

<b>Green Energy Cloud Simulation</b> <i>Partners: Enida Sheme, Polytechnic University of Tirana, Tirana, Albania</i> <i>Dražen Lučanin, TU Vienna, Vienna, Austria</i> Duration:	<b>August 15 - November 30 2015</b>
<b>Energy Efficient Cloud Simulation</b> <i>Partners: Dražen Lučanin, Ilia Pietri, Ivona Brandić, TU Vienna, Vienna, Austria</i> Duration:	<b>May 15 - May 30 2015</b>
<b>Power-Aware HEVC Decoding with Tunable Image Quality</b> <i>Partners: Erwan Nogues, Maxime Pelcat, INSA de Rennes, France</i> Duration:	<b>Winter 2014</b>

**Barrelfish port for Tiler Tile64***Partners: Xiaowen Wang, Robert Radkiewicz, Mats Brorsson, SICS, Stockholm, Sweden*

Duration:

**Summer 2013****Task Migration Mechanism for Distributed Many-Core NoC Systems***Partners: Mohammad Fattah, Amir-Mohammad Rahmani, University of Turku, Finland*

Duration:

**Spring 2013****Safe Motor Controller in Mixed-Critical Environment with Runtime Updating Capabilities***Partners: José Luis Gutiérrez, University of Granada, Spain**Miguel Méndez, Seven Solutions Inc., Spain*

Duration:

**November 5 - November 17 2012****Safe core-to-core channel implementation***Partners: William Davy, Wittenstein Inc., UK*

Duration:

**May 23 - May 24 2012****GRANTS****Tekniikan edistämissäätiö****2013***For thesis on energy aware software, 5000€***Svenska tekniska vetenskapsakademien i Finland****2013***For research visit to Rennes, France, 2500€***Otto Malms stiftelse****2014***For thesis on energy aware software, 5000€***Svenska tekniska vetenskapsakademien i Finland****2015***For research visit to FernUniversität in Hagen, Germany, 4500€***Oskar Öflunds stiftelse****2016***For research co-operation with FernUniversität in Hagen, Germany, 3000€***Waldemar von Frenckells stiftelse****2016***For research on energy aware software, 5000€***WORK  
EXPERIENCE****Åbo Akademi University, Turku, Finland***Post-Doc Researcher***January 2016 –****Fernuniversität in Hagen, Hagen, Germany***Wissenschaftlicher Mitarbeiter***September 2015 –****Åbo Akademi University, Turku, Finland***PhD Student***March 2011 – December 2015***Research assistant***April 2010 – March 2011****Brisa Inc., Pedersöre, Finland***IT manager***May 2009 – September 2009****Herrmans Inc., Pedersöre, Finland***IT support***May 2008 – September 2008****Brisa Inc., Pedersöre, Finland***Webshop assistant***May 2007 – September 2007****Digicomp Inc., Jakobstad, Finland***Sales person***July 2006 – September 2006***Technical support***May 2005 – January 2005****REFEREES****Prof. Johan Lilius**

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**Doc. Sébastien Lafond**

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**Prof. Jörg Keller**

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