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Date of birth

December 29, 1981

Languages

Swedish (native), English (fluent)

SUMMARY

- Systems engineer in real-time embedded systems with many years of experience, most recently in avionics, combining years of large-scale systems development in industry as well as university research and teaching. Strong capabilities in technical documentation, and writing and managing sharp and descriptive system and software requirements and design descriptions. Expert in analyzing, developing, and modeling safety-critical and embedded software, as well as conducting real-time scheduling and timing analysis for systems integration.
- Proven strong abilities in writing technical documents, including requirements specifications and design descriptions from complete system to unit level (more than one year of experience in Rational DOORS). Very experienced speaker at the most prestigious international conferences in embedded and real-time systems (see Publications). Extensive knowledge related to standards for functional safety (RTCA Do-178B/C, ISO 26262). Expert in system-level design and optimization using Genetic Algorithms, Tabu Search, Integer Linear Programming. Many years of experience with C, C++, Java, SystemC, XML, Matlab, and shell scripting, as well as communication protocols CAN, FlexRay, Ethernet, TCP/IP, MilStd 1553B, serial interfaces, and digital and analog I/O.
- Holds a Ph.D. degree in computer systems from Linköping University, including research experience at University of California, Los Angeles, as a guest scholar.

EXPERIENCE

Saab AB, Systems Engineer

January 2013–present

Model-Based Systems Engineering for avionics software development in the “JAS 39 Gripen E” military aircraft with safety requirements according to RTCA Do-178B and Do-178C.

- Requirements analysis and specification of Executable UML models in the tool Bridgepoint, specifically for the modeling and automatic code generation for safety-critical avionics software for functional monitoring and recording in the aircraft.
- Technical system documentation in Rational DOORS; requirements management, inspection, traceability, and testability
- Performance analysis and assessment of software applications; worst-case execution time analysis; end-to-end delay analysis

Saab AB, Software Engineer

January – December 2012

Software and systems engineer in a development project for a completely new avionics platform for the next generation of the “JAS 39 Gripen E” military aircraft.

- Software development (C language) of a time-triggered, distributed integrated modular avionics (DIMA) software platform for real-time communication infrastructure and ARINC 653 software partitioning; experience with the RTCA Do-178B standard for safety critical aerospace software; Java development of tools for avionics software integration

- Implementation of software services for real-time Ethernet, serial, and MilStd 1553B communication, as well as digital and analog I/O
- Writing software requirements and design descriptions in Rational DOORS
- Configuration management in Subversion; software development in a Linux environment; Agile development process in Scrum teams

Semcon AB, *Embedded Systems Specialist* October 2011–present
Specialist and consultant in the area of real-time and safety-critical embedded systems. Active partner in Safety-Critical Systems Competence Center focusing on real-time systems research and development with a strong emphasis on automotive functional safety according to ISO 26262. Leading a recent initiative to strengthen knowledge in requirements engineering for safety-critical systems in the whole company. Strategic work in positioning Semcon AB as a research partner with Swedish universities. Full time assignment at Saab AB (see experience section).

Linköping University, *Research Engineer and Ph.D. Candidate* 2006–2011
Department of Computer and Information Science

- Research and development of system-level design optimization tools for distributed real-time systems; expertise on co-design of control algorithms/strategies and scheduling/communication synthesis of the underlying distributed real-time execution platform; presentations at many international conferences on real-time and embedded systems; scientific publication
- C++ implementation of optimization algorithms such as Genetic Algorithms, Tabu Search, Simulated Annealing, Golden-Section Search, Greedy heuristics
- Constraint Logic Programming and Integer Linear Programming in ECLiPSe; formulation of optimization and constraint satisfaction problems in Prolog
- Timing and scheduling analysis of real-time systems; response-time analysis with fixed-point iteration
- Matlab programming and interfacing to C/C++ programs; design and performance evaluation of embedded PID and LQG controllers

University of California at Los Angeles, *Guest Researcher* March–July 2009
Cyber-Physical Systems Laboratory, Department of Electrical Engineering

- Research in the area of cyber-physical systems with a focus on adaptive real-time scheduling and event-based computer realizations of control applications.
- Joint publication of research results at the IEEE Real-Time Systems Symposium, San Diego, California, 2010. Full scholarship and financial support from Linköping University.

Linköping University, *Software Developer* June–December 2005
Department of Computer and Information Science

- Development of a simulator of temporal execution behavior in distributed real-time systems; SystemC and C++ programming
- Basic Linux shell scripting for automated execution of tests and experiments
- Temporal simulation of TTP, CAN, and FlexRay communication protocols
- Implementation of cyclic, rate-monotonic, and earliest-deadline-first scheduling
- Performed timing analysis based on fixed-point iteration for the assessment of worst-case response times in real-time systems

<i>EDUCATION</i>	Ph.D., <i>Computer Systems</i> Linköping University, Sweden	2011
	M.Sc., <i>Computer Science and Engineering</i> Linköping University, Sweden	2005
<i>PROFESSIONAL DEVELOPMENT</i>	Executable UML for Real-Time Systems Saab AB, Sweden (Course given by Model Integration, California) Advanced course in software and systems modeling with Executable UML. Development of class models, state machines, and action language.	2012
	Teaching in Higher Education Linköping University, Sweden Four-week course on learning, instruction, and knowledge. Mandatory course for university teachers at Linköping University.	2007
<i>SKILLS AND EXPERTISE</i>	Software development; C programming; C++; Executable UML; Java; SystemC; Matlab; Common Lisp; Scheme; Linux; MacOS X; MS Windows; Solaris; MS Word, MS Powerpoint; MS Excel; MS Outlook; technical documentation in Rational DOORS; Subversion (SVN); Bridgepoint; RTCA Do-178B; RTCA Do-178C; ISO 26262; ARINC 653; AUTOSAR; distributed real-time systems; real-time scheduling; timing analysis; simulation; modeling of real-time systems; networked embedded systems; computer architecture; communication protocols; Controller Area Network (CAN); Time-Triggered Protocol (TTP); FlexRay; Ethernet; TCP/IP; PID and LQG control; control performance optimization; cyber-physical systems; fault tolerance; combinatorial optimization algorithms; algorithm design; meta heuristics; Genetic Algorithms; Simulated Annealing; Tabu Search; integer linear programming (ILP), constraint logic programming (CLP); technical writing; technical presentation; teaching and assistance	

- A. Aminifar, S. Samii, P. Eles, Z. Peng, A. Cervin. “Designing High-Quality Embedded Control Systems with Guaranteed Stability,” *IEEE Real-Time Systems Symposium*, San Juan, Puerto Rico, December 2012.
- S. Samii, U. D. Bordoloi, P. Eles, Z. Peng, A. Cervin. “Control-Quality Optimization for Distributed Embedded Systems with Adaptive Fault Tolerance,” *Euromicro Conference on Real-Time Systems*, Pisa, Italy, July 2012.
- S. Samii. “Quality-Driven Synthesis and Optimization of Embedded Control Systems,” *Linköping Studies in Science and Technology. Dissertation No. 1386.*, Ph.D. thesis, September 2011.
- A. Aminifar, S. Samii, P. Eles, Z. Peng. “Control-Quality Driven Task Mapping for Distributed Embedded Control Systems,” *IEEE International Conference on Embedded and Real-Time Computing Systems and Applications*, Toyama, Japan, August 2011.
- S. Samii, U. D. Bordoloi, P. Eles, Z. Peng. “Control-Quality Optimization of Distributed Embedded Control Systems with Adaptive Fault Tolerance,” *Workshop on Adaptive and Reconfigurable Embedded Systems*, Chicago, Illinois, USA, April 2011.
- S. Samii, P. Eles, Z. Peng, A. Cervin. “Design Optimization and Synthesis of FlexRay Parameters for Embedded Control Applications,” *IEEE International Symposium on Electronic Design, Test and Applications*, Queenstown, New Zealand, January 2011.
- S. Samii, P. Eles, Z. Peng, P. Tabuada, A. Cervin. “Dynamic Scheduling and Control-Quality Optimization of Self-Triggered Control Applications,” *IEEE Real-Time Systems Symposium*, San Diego, California, USA, December 2010.
- S. Samii, P. Eles, Z. Peng, A. Cervin. “Runtime Trade-Offs Between Control Performance and Resource Usage in Embedded Self-Triggered Control Systems,” *Workshop on Adaptive Resource Management*, Stockholm, Sweden, April 2010.
- S. Samii, Y. Yin, Z. Peng, P. Eles, and Y. Zhang. “Immune Genetic Algorithms for Optimization of Task Priorities and FlexRay Frame Identifiers,” *IEEE International Conference on Embedded and Real-Time Computing Systems and Applications*, Beijing, China, August 2009.
- S. Samii, P. Eles, Z. Peng, and A. Cervin. “Quality-Driven Synthesis of Embedded Multi-Mode Control Systems,” *Design Automation Conference*, San Francisco, California, USA, July 2009.
- S. Samii, A. Cervin, P. Eles, and Z. Peng. “Integrated Scheduling and Synthesis of Control Applications on Distributed Embedded Systems,” *Design, Automation and Test in Europe Conference*, Nice, France, April 2009.
- S. Samii, M. Selkälä, E. Larsson, K. Chakrabarty, and Z. Peng. “Cycle-Accurate Test Power Modeling and its Application to SoC Test Architecture Design and Scheduling,” in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, May 2008.
- S. Samii, S. Rafliu, P. Eles, and Z. Peng. “A Simulation Methodology for Worst-Case Response Time Estimation of Distributed Real-Time Systems,” *Design, Automation and Test in Europe Conference*, München, Germany, March 2008.
- S. Samii, E. Larsson, K. Chakrabarty, and Z. Peng. “Cycle-Accurate Test Power Modeling and its Application to SoC Test Scheduling,” *IEEE International Test Conference*, Santa Barbara, California, USA, October 2006.