

Lars Ole Pontoppidan

CURRICULUM VITAE

Embedded Software Consultant with M.Sc. Electrical Engineering

Personal

Birth: 17 December 1981, Copenhagen, Denmark

Objective: Development of embedded systems interacting with the real world focused on quality and reliability

Work Experience

June 2013 – Present: **Embedded Software Consultant** FirmwareWorks v/Lars Pontoppidan

Founded personal company to enable consulting services regarding embedded software development and systems design. Work includes:

- Software development in C language on RTOS platform using NXP ARM Cortex M controller, interfacing custom FPGA, implementing TCP/IP with FTP, HTTP and other web services, SD card access with filesystem, LCD with user interface.
- Controlling GHz capable RF circuits from software: mixers, filters, oscillators using SPI and similar interfaces
- Software for battery powered device using TI MSP430 controller, with mobile network connection using an encrypted JSON protocol and with LCD user interface.
- Software for smart LED driver on Atmel ATxmega controller, implementing smooth fading and tunable white, controlled by DALI (Digitally Adressable Lighting Interface)

Aug. 2010 – Dec. 2013: **Software Development Engineer** Novo Nordisk A/S, Hillerød

Development work for medical device, achieving market launch:

- Wrote software for ultra low power 8-bit microcontroller system in C language
- Wrote unit tests and used static code analysis tools, arranged external code reviews, used automated build and test process with Hudson build server. Experience with elaborate black box system testing.
- Followed methodical and rigorous software development process complying to regulatory requirements including FDA major level of concern
- Contributed to 510(k) submission process, achieving FDA approval

Responsible for design and implementation of production test concept:

- Test concept design and implementation of electronics module production test capable of high volume production. Factory and site acceptance tests on location at Chinese factory.

Sept. 2007 – July 2010: **Research and Development Engineer** CB Svendsen A/S, Værløse

Designed and implemented software for embedded applications:

- Wireless remote metering system with GPRS and RF links based on FreeRTOS
- Motor controller for heavy machinery with safety systems
- Controller for intelligent high power DC-DC converter
- Test and service software for various products (Windows)

Technologies, methods and concepts used:

- C language, FreeRTOS realtime operating system, Freescale HCS12, HCS12 assembly language, Atmel AVR, 8051 derivatives, GSM/GPRS, 433 MHz RF, motor interfacing and control, battery powered systems
- Fault tolerant design, resource limited design, battery preserving techniques, multithreading, hard realtime systems, serial communication, protocols, basic cryptography, user interface design

2000 – 2009: **Software Consultant** Novo Nordisk A/S, Bagsværd and Måløv
(part time)

- Developed Windows application in Visual Basic 6 for managing documents with features for assisting project work flow and management.
- Developed a tool for calculating immuno assay results with automatic report generation

2005 – 2006: **Teaching assistant** for the courses: Danish Technical University, Lyngby

- Introduction to Statistics: Spring 2005
- Autonomous Robot Systems: June 2005, Feb 2006 and June 2006

Education

Courses

- 2013 (IQPC) Software Design for Medical Devices conference
- 2013 (IQPC) Agile Methods for European Medical Software Development
- 2012 (AAMI) Software Validation Requirements and Industry Practice

2001 – 2007: **M.Sc. Electrical Engineering** Danish Technical University, Lyngby
Thesis: "Laser Based Navigation for Mobile Robots" with Aske Olsson
Noteworthy courses: Design and Synthesis of Embedded Systems, Linear Control Design, Fuzzy, Neural and Adaptive Control, Computer Control Systems, Applied Microprocessor Techniques, Motion Control, Algorithms and Data Structures I and II

Summary of key skills

Regarding embedded software development:

- Advanced C language for embedded applications. Some experience with C++
- Software design using object oriented principles for testable and maintainable code
- On-target and off-target testing, integration tests, production tests
- Hardware bringup: fault finding, circuit analysis, soldering, oscilloscope handling
- Communication interfaces: UART, SPI, I2C, RS-485, RF (FSK), Ethernet, USB
- TCP/IP (lwIP), HTTP server and client, various network protocols
- Applied mathematics: signal processing, algorithms, fixed point calculations

Tools and platforms:

- IDEs: Eclipse, Visual Studio, CodeComposer, CrossStudio, IAR Embedded workbench
- Dev. tools: Mercurial (HG), SVN, ClearCase, PC-Lint, Hudson/Jenkins build server
- Tool Chains: GCC, Keil C, TI MSP430 C
- RTOS (FreeRTOS) on microcontrollers
- Linux platform, system management, scripting (python, bash)
- Windows platform and programming in C#

Other:

- Team lead experience for smaller teams using simplified SCRUM concepts
- Plays classical piano for pleasure, plays Badminton

Languages:

- Danish: Native language
- English: Fluently speaking, advanced reading and writing

Contact Information

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