# JOHAN WESTLUND

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## SUMMARY

Embedded software engineer with more than 5 years of C / C++ experience developing firmware, drivers, libraries and applications for many different processor architectures and operating systems.

I have mainly worked with product development in small to medium size agile teams, close to other software and hardware engineers. I am very independent and have no problem working alone as well as working together with other team members. I have good communicative skills and find it easy to talk to people with other professional backgrounds than I have.

Board bring up, documentation and test has always been a part of my work including measurements and soldering. I also have experience with C# and Java creating test software and integrating low level libraries into these languages as well as some experience with electronic design.

## WORK EXPERIENCE

**Embedded Software Engineer at BitSim AB** **2015 - 2016**

- Product development consultant
- Firmware, library and application development
- Electronic design

**Embedded Software Engineer at Speed Identity AB** **2012 - 2015**

- Product development and maintenance
- Firmware, library and application development

**System Developer at Combitech AB** **2011 - 2012**

- Software development and maintenance at Ericsson AB working with time synchronization in radio base stations.

## EDUCATION

**Engineering Physics and Technical Engineering – M.Sc. System on Chip** **2005-2011**

***Master Thesis: Voice Processor on an FPGA***

## KEYWORDS

C, C++, Micro controllers, Windows, Linux, SVN, GIT, C#

## SKILLS AND TOOLS

(2) Some experience (3) Experience (4) Good experience (5) Mentor

| Languages | | Operating Systems | |
|---|---|---|---|
| C | 4 | None | 4 |
| C++ | 4 | Windows XP/7/10 | 4 |
| C# | 3 | Windows XP/7 Embedded | 4 |
| Java | 2 | Linux | 4 |
| Assembly | 3 | ThreadX | 3 |
| Verilog | 3 | Android | 2 |

| IDEs and Tools | | Libraries and Frameworks | |
|---|---|---|---|
| Eclipse | 4 | .NET | 3 |
| Visual Studio | 4 | GStreamer | 3 |
| GNU Toolchain | 4 | OpenSSL | 3 |
| GDB | 3 | SDL | 2 |
| Altium Designer | 3 | Zlib | 2 |
| Eagle PCB | 3 | OpenCV | 2 |
| MPLABX | 2 | OpenGL | 2 |

| Architectures | | Communications | |
|---|---|---|---|
| x86 / x64 | 4 | UART | 4 |
| ARM Cortex | 3 | RS232 | 3 |
| ARM9 / ARM11 | 4 | USB 2.0 / USB 3.0 | 4 |
| 8051 | 3 | I2C | 3 |
| Atmega32 | 3 | SPI | 4 |
| PIC24 | 3 | Ethernet | 3 |

| Protocols | | Flash and Debug | |
|---|---|---|---|
| eMMC Jedec | 3 | JTAG | 4 |
| NMEA | 3 | SWD | 3 |
| SCSI | 3 | C2D | 2 |
| DICOM | 2 | | |

| Versioning | | Industries | |
|---|---|---|---|
| SVN | 4 | Industrial | 4 |
| GIT | 3 | Government | 3 |
| JIRA | 4 | Data Security | 3 |
| TRAC | 2 | Telecom | 2 |

## INTERESTS

Electronic design, image processing, parallel computing, code optimization, hardware acceleration, hardware emulation, sensors fusion, control theory

## PROJECT EXAMPLES

- Product key generator and key decryption (AES) for software feature protection, C++ and C#
- RTOS firmware development for super speed USB 3.0 interfacing.
- Video Streaming using GStreamer API on an ARM Cortex A9 (i.MX6). The stream was compressed with h.264 utilizing the i-MX6's hardware VPU.
- Developed a 3D engine on a 16-bit PIC MCU which has 2D graphic hardware acceleration. This was done to demonstrate the capabilities of this MCU and its 2D support.
- C++ library development on Windows for a custom made controller board. Also developed a C# wrapper for easier implementation for the customer.
- Firmware and driver development for a custom lift system including PID regulation. Also with C# support.
- Designed and developed an automated production test software in C# to support the many different hardware devices in a biometric enrolment system.
- Designed and developed an automated production test framework in C# which is modular and scalable in the sense that hardware modules, communication protocols, test equipment and test cases can be configured and loaded at runtime. The purpose was to have a general framework to test several different products with different test equipment as well as adding new test cases without having to change the production test software.
- Developed an Ethernet 10/100 device (PCB) using Altium designer.
- Developed a USB dongle using Altium designer
- Integrated a COM framework into Java using JacoZoom.

## COURSES

- .NET Design Patterns – 4 days
- Linux Device Drivers – 2 days
- PSoC Capacitive Sense – 1 day

## PROJECT LOGS

**Embedded Software Engineer at BitSim AB** **2015 – 2016**

- Firmware development on ARM9 – USB3 interfacing
- Firmware development on EFM32TG (Cortex-M3)
- Windows and Linux library development (SPI host)
- Test applications for functional testing
- Electronic design, developed a PCB board for Ethernet 10/100 application
- Electronic design (PCB) and firmware design on EFM8UB (USB dongle device).
- Architectural design and implementation of an automated production test framework to support testing of all these products and future products in a production line.
- Software and hardware upgrade on X-ray machine. WES7 image build.
- Product key generator and key decryption for protecting software features

**Embedded Software Engineer at Speed Identity AB** **2012 - 2015**

- Integration of 3rd party drivers/libraries to higher level languages for devices such as cameras, fingerprint readers, signature devices etc.
- Improving camera images of different cameras to get a good picture of a human face both in a biometric perspective but also from an end-customer perspective. The improvements were done by tweaking camera parameters, reduce noise and developing auto-features to adapt to the photographed object and environment changes such as surrounding light conditions.

**System Developer at Combitech AB** **2011 - 2012**

Software development and maintenance at Ericsson AB working with time synchronization in radio base stations. My main responsibility was maintenance and upgrades of GPS as well as the FPGA interface.

**Master Thesis – Voice Processor with echo cancelation** **2011**

- Implementing the soft DSP voice processor on an FPGA from block schematic design
- PCB interface between an ARM11 board and the XILINX FPGA board
- Firmware for DSP processor using numerical machine code (no compiler available)
- Linux kernel module for communication between the ARM host and the DSP
- Demo application for ARM11 to test and demonstrate the DSP