Mathias Spiessens

Personal data

Name & surname:	Mathias Spiessens
Birth date:	on request
Nationality:	Belgian
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Marital status:	on request
LinkedIn:	Mathias Spiessens on LinkedIn

Experience

Senior firmware designer with experience in design and development on ARM Cortex-M microcontrollers in bare metal C & C++. Profound interest in design of connected devices and the accompanying communication protocols. Affinity with electronics: read schematics and troubleshoot on hardware with oscilloscope, logic analyser, in circuit debugging and basic soldering skills. Used SCRUM and Kanban processes supported by the Atlassian tool set.

”Simplicity is beauty” - Aim to deliver the most elegant solution to the problem.

Open Source Project

December, 2016 - Now
Private Project
Implementation of the data flow paradigm in C++ aimed at, but not exclusive to, microcontrollers. Including a simple but effective low power scheduler effectively replacing a RTOS. It is published under the permissive MIT license and can be found at Flow on GitHub. C/C++ Conan packages and CppUTest unit tests are provided for ease of use and verification respectively.

Senior Firmware Designer

May, 2018 - Now
Onera Medical
Prototype design (from scratch) of a wearable system for sleep diagnostic. Multiple wearable sensors transmit biosignal information over a Bluetooth 5 Low Energy link to a gateway. The gateway enables future cloud connectivity for the Bluetooth non-IP network. Medical personnel can control the system through a web interface provided by the gateway. Leveraging the features of IPv6, MDNS and LLMNR the gateway web interface can be accessed in a ”zero configuration” / standalone manner. A powerful method that prevents complicated dependencies, and the accompanying logistics, on the client side.
Technologies: Bluetooth 5 Low Energy, CoAP/UDP/IPv6/..., bare-metal C/C++, ARM Cortex-M, Ethernet, USB

Senior Software Engineer

June, 2017 - April, 2018
Sioux Embedded Systems - Customer Project
Project is under NDA until it is publicly announced in the second quarter of 2018.
Complete design and implementation of the firmware on a Microblaze-based system. Working together with the digital design engineer to specify and implement interfaces between software and hardware. Meet timing constraints dictated by the customers process.
Technologies: bare-metal C/C++, Xilinx Microblaze, FPGA, VHDL, Ethernet, TCP/IP, UDP/IP, image processing

Senior Software Engineer

January, 2017 - December, 2017
Sioux Embedded Systems - Customer Project
Locker block controller for smart and connected locker systems typically used in public spaces like train station,

swimming pool etc. The controller connects a collection of lockers to the Cloud services. Design, implementation and verification of the board support package (BSP). The BSP consist of drivers for basic peripheral like UART (RS-232 & RS-485), SPI, I2C. But also complicated peripherals like DMA, 2D accelerator, LCD and Ethernet. Third party stacks for graphical user interface, filesystem and Internet protocols are integrated into the BSP.
Technologies: bare-metal C/C++, STM32F7 ARM Cortex-M7, Ethernet TCP/IP, Display & Touch, Flash file system

Software Engineer

November, 2015 - June, 2017
Sioux Embedded Systems - Customer Project
Wassenburg Medical endoscope washer-disinfector and drying cabinet. Design and implementation of a cost-effective alternative to PLC-based system for sensing & control. The system design consist of an embedded Linux controller, which performs the washing process, and custom CANopen slaves to interface to sensors, valves, pumps, etc. On-target unit tests and a blackbox test were performed on each printed circuit board (PCB) for verification in accordance to the tracebility requirements of the ISO 13485 medical standard.
Standards: ISO 13485, CAN in Automation (CiA)
Technologies: bare-metal C/C++, STM32F2 ARM Cortex-M3, CAN & CANopen protocol, iMX6 ARM Cortex-A9, OpenEmbedded

Skills

- **Targets**: Bare-metal C/C++, ARM Cortex-M, Xilinx Microblaze
- **Processes**: Agile (SCRUM, Kanban), Version control (Subversion, GIT), Continuous integration
- **Protocols**: Ethernet TCP/IP & UDP/IP & more, CAN & CANopen, Customer specific designs
- **Related fields**: PCB schematic & layout, oscilloscope, logic analyser, in-circuit debugging & troubleshooting

Courses

2017: Mechatronics System Design [ecp2.eu & Mechatronics Academy BV]
2016: Power integrity for product designers [High Tech Institute]
2015: Comprehensive VHDL [doulos.com]
2015: ESD & High Voltage Training [Sioux Embedded Systems BV]

Companies & Education

2018-Now Senior Firmware Designer
Onera Medical, The Netherlands, Eindhoven
2012-2018: Senior Embedded Software Engineer
Sioux Embedded Systems BV, The Netherlands, Eindhoven
2010-2012: Master of Science in Applied Computer Science, cum laude
Katholieke Universiteit Leuven, Belgium
Specialisation: Software Design
2009-2010: Erasmus at The Hague University, The Netherlands
Minor: Embedded Systems
2006-2010: Professional bachelor in Electronics-ICT, cum laude
Specialisation: Embedded Systems; De Nayer Instituut, Belgium

Special interests

Languages

- Dutch (first language)
- English (full professional proficiency)
- French (basic)