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Embedded Systems Engineer

26 years of experience in Embedded Software and Hardware engineering

- Senior software engineer with an excellent understanding of embedded software and hardware.
- Strong communicative and leadership skills, autonomous, analytic, methodical and self-learning.
- Masters several languages.
- Capability to integrate in multi-cultural environments and in virtual worldwide teams.
- Accomplished successful projects in the **Medical Device**, communication, digital video, consumer electronics, defense and the Dutch national police.
- Experience with the international medical standard IEC62304 and knowledge of the standard IEC60601

Competencies

Hardware

- *PCB development*: Ulticap, Orcad, MicroCap, Layo.
- *Processors*: ARM Cortex Mo+, ARM Cortex M4, ARM Cortex-A8, STM8, STM32, OMAP SOC (ARM+DSP) TI, Z80, ADSP2105, DSP TMS320C55/C54, 68k, 6502, PowerPC, AV7200.

Software

- *Source control*: Github, Clearcase, Source Safe, CVS, SVN.
- *Programming Languages and assembly language*: C, C++, Python PERL, Node JS, Java/J2ME, Android, Delphi, Pascal, HP Basic, Visual Basic, Smalltalk, ADSP2105, 68k, Z80, 6502, QSL.
- *Drivers*: Smartcard, I²C, SPI, μwire, USB, UART, DCF77, RFID.
- *RTOS*: QNX, Nucleus, SymbianOS, DSP BIOS, VxWorks, RTE, OSAL.
- *Debug*: IAR, MCUXpresso, CCS, Lauterbach (Trace 32), ARM Realview, NOHAU ICE, Windriver, Logic Analysers, LDRA, Code Sonar, Lint, QAC.
- *Design tools*: Enterprise Architect, Visio, Doxygen, StarUML, Diagram Designer.
- *Others*: RFID, embedded systems, digital video (MPEG, DVB2 et OpenTV), bootloaders (IPL, Xloader, U-Boot), analogue video, smart cart, Geographic information systems(GIS), GPS and geoinformatics, Digital Signal Processing, SQLite, MySQL.

Norms

- **Medical Device Regulations, IEC62304**, IEC60601, FDA guidelines, CMMI, document control(Fagan Inspection).

Design

- UML, Object oriented design(Coad & Yourdon), Real time development methodes (Ward & Mellor).

Languages

Dutch - Mother tongue
English and French - Fluently
German - Read, written, spoken

Career history

Since September 2019 , Ilex Embedded Systems

Position **Embedded Systems engineer / owner**

Customer Merck, Molsheim, France April 2020- July 2020 :

Prove Of Concepts for pharmaceutical equipement on OPCUA Location Discovery Server and a connector process for connecting to a Rockwell PLC.

Technical environment

Node JS scripting, OPC UA, Docker, Linux, OPC UA Location Discovery Server.

Customer MDEG Digital, Freiburg, Germany, September 2019-December 2019:

Robot Arm (STM32)

- Migration of SW projects from IAR to TrueSTUDIO Atollic
- Production tool development in Python

ESP32 to Thingsboard connection (IoT) prove of concept:

- Setup of secure connection (TLS1.2) MQTT with Thingsboard

Human milk pump (ESP32):

- Design documentation: project plan, requirements, architecture, detailed design, risk management.
- Implementation of pressure sensor (BMP280) and LED drivers and Code cleanup of existing code.

Technical environment

C, C++, Python, IEC 62304, UML, ESP32, STM32, Enterprise architect, Eclipse, Unity (unit test framework), BMP280

September 2014 – February 2019, EMS - Electro Medical Systems, VD, Switzerland.

Position **Software Coordinator / Embedded software engineer**

Responsibilities 1) I have managed the complete software life-cycle for the [Airflow Prophylaxis Master](#) product (Medical device, Class B software, Good Design® Award 2018).



- I have created and managed the technical documentation to reply to the standard IEC 62 304. This included the Software life-cycle plan, risk management, Software requirements, Architecture, Detailed design. Participated in FDA 510(k) submissions.
- I was responsible for the firmware implementation. A part I have outsourced to a third party, and a major part I implemented with my team member. This resulted in the first production code that was successfully launched in march 2017. Start production was 5000 devices per year. Since then I have released 4 maintenance releases for performance improvement and functional enhancements.
- Outsourcing of development activities for the wireless pedal software, and follow up (Subcontractor selection, device specification, support of consulting company, test, integration of pedal with the product). I released one wireless pedal maintenance release after the first production release. I have also ported the code to another long range Bluetooth module.
- Unit testing (software validation) of medical software with LDRA Tbrun.

- Software planning with Agile methodologies, definition of work packages and alignment of the work packages with the hardware planning.
- Organized and executed the Software Risk analysis.
- Requirements tracking with LDRA TBreq in the documentation from design input to unit test documentation
- During the above tasks I worked together in a multi disciplined team to assure the correct working of the mechanics, electronics, hydraulics and pneumatic and powder. As part of my tasks I have trained the after-sales service team and the production team. And I have been working closely with the quality team to have the software validated and verified.
- Definition and implementation of the service tool that helps the after-sales team and the production team to setup the device configuration and to analyse technical issues. Log data is downloaded with this tool from the device by after-sales for data analyses and statistics on the device usage. This data is stored in a SQL database.



Technical environment

2) Development of the software for the RFID module for a new Medical physio-therapeutic device for prove of concept for the given hardware.

3) Ultrasound module prove of concept for a new algorithm for a dental scaler. Selection of processor, electronic board test, software architecture and implementation of a part of the software.

C, LDRA TBrun, LDRA TBreq, LDRA TBvision, NXP Kinetis, ARM Cortex Mo+ and M4, Bluetooth, Silicon Labs BLE-113/BLE-121LR, IAR, Enterprise Architect, State machine, GitHub, IEC62304, Medical software, C#, Visual Studio, Python, SQL, MCUXpresso, Enterprise Architect.

June 2014 – July 2014, Sécheron, Meyrin, GE, Switzerland. Consultant for GoConcept.

Position **Embedded software engineer**

Responsibilities Resolve anomalies in existing software in railroad control and protection relay device.

- Code review, and implementation of improvements
- Implementation of error handler
- Field test of the improved code. (During a test period of 6 months the problem was not reproduced and is considered as solved)



Technical environment

C, C++, Atmel processor, ARM Assembly

Mars 2013 – April 2014, Codman Neuroscience (Johnson and Johnson), Le Locle, NE, Switzerland. Consultant for GoConcept.

Position **Embedded software engineer**

Responsibilities Development of boot-loader (IPL), application and driver (graphics, audio, temperature, watchdog, GPIO, NOR, I2C) software conform medial standards.

Documentation, coding, code improvement and testing for intra cranial pressure monitor (Hydrocephalus).

Hardware reference for the local software team and technical interface with the US based hardware provider.

Configuration of the processor and measurements for electromagnetic interference (spread spectrum).

Development of scripts for packaging (bash) and tools for development and test in Python, CRC header and BMP image creation.

Technical environment

C, C++, ARM, UML, QNX, Momentics, CCS5 (TI JTAG debug environment), TI AM3517 (ARM Cortex-A8), IEC62304, LDRA, Codesonar, Clearcase, IPL, U-Boot, Xloader, medical software, Scrum.

June 2012 to Mars 2013, Valtronic, Les Charbonnières, VD, Switzerland. Consultant for GoConcept.

Position **Electronic engineer / Embedded software engineer**

Responsibilities **Active implant for heart stimulation:**

Development of a wireless boot-loader.

Development of implant hardware test software.

Active brain implant:

Implementation of tests for an active brain implant with CVI (National Instruments).

Setup of the hardware test bench.

Investigation of problems encountered by the test bench with the implant (alpha tester).

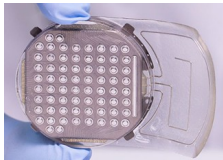
Development and realization of the electronics of a burn-in tester for active implants.

Endoscope:

Debug of electronics for an endoscope prototype.

Technical environment

C, UML, STM8, STM32, STVD 4.2, μ Vision 3, CCS 5, IEC62304, National Instruments CVI, medical software .



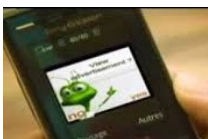
March 2009 to October 2011, Prim'Vision. Villeneuve-Loubet, France

Position **Software development engineer**

Responsibilities

Creation of a software application, part of a client server system for mobile publicity

- Architecture, design and requirements identification.
- Implementation of the application for multiple platforms. Worked on all parts of the application. E.g. UI (3D graphics), database interface, geo positioning



Technical environment

C++, UML, SQL, Symbian OS, Java/J2ME, Android, Windows Mobile, Bada, MMI, SVN, Windows, SQLite, StarUML, Diagram Designer

April 2002 to March 2009, Texas Instruments (TI), Villeneuve-Loubet, France.

Position **Technical lead / Systems engineer**

Responsibilities Technical leader for a modem software integration team in a program for mobile phones

- 1) The team consisted of 3 engineers/ Integration cycle of 2 weeks during 2 years/agile process.
- 2) This job required collaboration with off site teams in charge of software development (based in India, Germany, France, Israel and the USA), to resolve issues, to co-ordinate, and to improve the overall software quality.
- 3) I led the transition from a gmake build system to Sbuild build system (Scons based)
- 4) Assured the Clearcase source control architecture, and was mentor for my team members on Clearcase configspecs and merges.

Symbian baseport software integration for OMAP processors

- 1) Bi-weekly release cycle/during 2 and half years/agile process
- 2) Worked in the team that designed the pioneer Integration process and was actively involved in the design of this process internal and external.
- 3) Troubleshooter, customer support and release management.
- 4) I also was the technical interface between TI and Symbian by means of conference calls and meetings.
- 5) Integration tools development to improve the integration speed.

Other projects

- Development of DVD sub-picture software library for multimedia platform (AV7200).
- Silicon validation DSP (by means of assembly code test cases) and graphic accelerator of set-top box chip by means of test code.
- Development of software for DSP TMS320C54/C55: platform and validation
- Development of Symbian OS USB driver.

Technical environment C, C++, PERL, ARM, DSP TMS320C55/C54, ClearCase, SourceSafe, Clearquest, gmake, Sbuild, Symbian OS, Nucleus, DSP BIOS, Windows XP, UNIX, CCS, Lauterbach Trace32 (JTAG/ETM), OMAPv1030/1035, OMAP1510/1610/2420, AV7200 (chip multimedia), USB, μ wire, Agile.

December 2000 to February 2002, Silicon & Software Systems, Solution provider for the consumer electronics industry, Ireland

Position **Embedded Software engineer.**

Responsibilities

- Development of test software and code of a low-level smart card driver.
- Design and documentation for hard disk recorder project.
- Development of Windows terminal software to test an embedded OpenTV system.
- Design and implementation of a serial communication protocol.

Technical environment C, Visual C++, Windows NT, VxWorks, OpenTV, Solaris, ClearCase, PCB development.

July 1998 to July 2000, Signaal Communications and Philips Digital Networks in the Netherlands. Consultant for PTS Software.

Position **Embedded Software engineer**

Responsibilities

- Embedded software development, maintenance and customer support for a professional digital satellite video receiver.

Technical environment

- The development of embedded logical and physical drivers.

C, PowerPC, ADSP2105 (assembly), 68k(assembly), digital video (MPEG and DVB2), analogue video, Solaris, Unix, Fagan Inspection, JAVA, CVS, SourceSafe.

March 1995 to July 1998, Korps Landelijke Politie Diensten, DTOO.

Development department of the Dutch police, **the Netherlands**

Position **Development Engineer.**

- Responsibilities
- Development of embedded C applications.
 - Accompanying of outsourcing development projects.
 - Product requirement specification design.
 - The development of technical GUI and database applications.
 - Development and requirement specification of GIS and GPS based tools.
 - Data processing of digital maps.
 - Presenting the above applications during presentations.

Technical environment Delphi, C, Windows, Lauterbach, NOHAU, Tensing GIS Toolbox, SQL, Beologic, geoinformatics, OpenGL, SourceSafe.

June 1993 to February 1995, Dimtronic Electronica, Manufacturer of scoreboards, the Netherlands

Position **Hardware/software engineer.**

- Responsibilities
- Electronic hardware and embedded software development for scoreboard products and light dimmers.
 - PC software development for scoreboard control.
 - Coaching of a team (3 persons).

Technical environment C, Pascal, Z80 assembly, Layo, OrCAD, DCF77.

Education

Executive Master Of Business Administration (EMBA)

01/2009 – 01/2012, thesis defense 01/2015.

EuroMBA [AACSB, AMBA, EQUIS]: Audencia Nantes School of Management (FR), Université Paul Cézanne (FR), Maastricht Business School (NL), HHL – Leipzig (D), EADA (S), Kozminski Academy of Entrepreneurship and Management (PL)

HTS Electronics (Engineering degree)

1988-1992

Hogeschool Haarlem, the Netherlands

Training

Introduction to Artificial Intelligence (AI)	EDX online training by Microsoft using Python and Azure	September 2018
Agile Adoption and Development for the Regulated Medical Software Industry	ShoeBar Associates and Lean Agile Partners	2018 (1 day)
Software Design for Medical Devices	Congress	2017 (3 days) , 2018 (3 days)

LDRA TBrun	Training for the software unit testing with LDRA. Training given by ISIT (LDRA representative France).	2016 (3 days)
Training IEC-62 304	ISIT	2016 (2 days)
Training IEC-60 601	TÜV Rheinland	2015 (1 day)
LDRA	Training for the software standards compliance, testing, and verification tool LDRA. Training given by LDRA.	2013 (3 days)
Managing Projects	ESI International	2007 (2 days)