

# Julien Lefrique | Firmware Engineer

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French citizen • Married

## Experience

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### Debiotech SA

#### Lausanne (Switzerland)

*Research and Development Engineer*

Since Jan.2010 (4 years)

Responsible of the firmware development of a MEMS-based insulin pump, which is remote controlled by an Android platform. Efforts are oriented toward precision, patient safety and low-power consumption (<http://www.jewelpump.com>).

- Development of the firmware of the pump (MSP430 and STM8, C and Assembly), started from scratch.
- Evaluation and integration of various Bluetooth and Bluetooth Low Energy stacks.
- Support on Android development on the Remote Control (Java).
- Development of the application used to test the electronic assemblies (Python).
- Writing of technical documentation: studies, specifications, architecture and design documents, FMEA...
- Unit and integration testing.
- Development of internal tools for instrumentation, build system, microfluidic tests...
- Apply functional safety concepts: risk assessment, risk reduction with protective parts, self-tests...

### Actia Aixia SA

#### Le Bourget-du-Lac (France)

*Electronic Engineering Intern*

Feb.2009 – Jul.2009 (6 months)

Electronic design for special vehicles and development of embedded software (XE167, C language). Worked on a graphic display used as a dashboard and on-board diagnostic system.

- Port of *lwIP*, a free TCP/IP stack and development of HTTP, TFTP, Telnet and NetBIOS servers (<http://savannah.nongnu.org/projects/lwip>).
- Development of a SD card driver and integration of a FAT library.
- Port of the CoDeSys runtime on the platform to make the device programmable with IEC61131-3 languages.
- Development of a CAN driver.
- Electronic schematics (CADSTAR).

### Galley Technologies

#### Chez-le-Bart (Switzerland)

*Automation Engineering Intern*

Sep.2007 – Feb.2008 (6 months)

Test and measurement systems development, using LabVIEW, for Swiss watchmakers.

- Acoustic measurement system for the analysis of Minute Repeater chimes.
- Torque control of a DC brushless motor to simulate a barrel mainspring.

### Motorola Ltd.

#### Swindon (United Kingdom)

*Software Engineering Intern*

Feb.2006 – Apr.2006 (3 months)

Applications development for mobile devices in J2ME (Java 2, Micro Edition) within the framework of the European project aceMedia which is aimed at discovering and exploiting knowledge contained in media files in order to make media more accessible to users by providing a flexible means of sorting, labelling and searching.

## Education

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### University of Technology of Belfort-Montbéliard (UTBM)

#### Belfort (France)

*Master's degree (Diplôme d'Ingénieur), Electrical and Control Systems Engineering*

2009

Speciality Electronic and Embedded Systems

**IUT of Nancy-Brabois**

**Villers-lès-Nancy (France)**

*DUT degree, Electrical Engineering and Industrial Computing, with High Honours (mention Bien) 2006*

Equivalent to a two-year technical degree

**Lycée Général et Technologique Boutet de Monvel**

**Lunéville (France)**

*French Baccalauréat, Mathematics and Power Systems, with Highest Honours (mention Très Bien) 2004*

## Languages

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**French:** Native language

**English:** Professional working proficiency

*TOEIC in 2006 with 800 points*

**German:** School knowledge

## Computer skills

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**OS:** GNU/Linux (Debian and derivatives), Android, Microsoft Windows, Mac OSX

**Languages:** C, C++, Python, Java, Shell script, Assembly (MSP430, TMS320, 8051), VHDL, LabVIEW

**VCS:** Git, Subversion, Mercurial

**Microcontrollers:** MSP430, STM8, C166/XE166, TMS320, PIC16/18/24, 8051

**Communication:** UART, I2C, SPI, TCP/IP stack and related protocols, CAN

**RF:** Bluetooth, Bluetooth Low Energy

**RTOS:** Bare metal, FreeRTOS, PICos

**Embedded Linux:** Buildroot

**Word processing:** Microsoft Office, LibreOffice, L<sup>A</sup>T<sub>E</sub>X, Lightweight markup languages (Markdown, reStructuredText...)

**Simulation:** Matlab, Simulink, Scilab, NumPy, dSPACE

**Electronic:** CADSTAR, Orcad, Kicad, Proteus, LTspice

**Test Equipments:** Oscilloscopes, Multimeters, Logic analyzers, Bluetooth analyzers...

**PLC:** CoDeSys, Step-7, PL7-2, PL7 Pro

**Methodologies:** Structured Analysis for Real-Time Systems (SA/RT)

**Diagrams:** Data Flow Diagrams, State Diagrams, Sequence Diagrams

## Additional information

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**Association:** Member of the Armadeus project (electronic board for embedded Linux systems on ARM9 and FPGA)

**Sports:** Mountain Bike, Swimming, Walking, Basket-ball

**Interests:** Free Software, Smartphones, Travels, Cinema

**Other:** Driving license and car owner

## References

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**Pascal Bauermeister:** Software Project Manager at Debiotech SA

**Sylvain Vachez:** Product Development Manager at Actia Aixia SA

**Yves Galley:** Owner at Galley Technologies