

**Fabien Le Mentec**

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May, 17th 1984

French nationality

Driver licence

Boat licence

Diving PADI Open Water Level 1

# Embedded systems engineer

## Education

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| 2008 | <b>Master degree in computer science. EPITECH, Paris.</b>   |
| 2006 | <b>Bachelor degree in computer science. EPITECH, Paris.</b> |

## Employment

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|----------------|--|
| 2012 - present | <b>Embedded systems engineer at ESRF (permanent position)</b> <ul style="list-style-type: none"><li>– Control and data acquisition for physics instruments<ul style="list-style-type: none"><li>– embedded systems electronics and software</li><li>– high performance Linux software stack and drivers</li><li>– realtime using ARM AM335x PRUs</li></ul></li><li>– HDL blocks for PCIe and 10GbE FPGA based hardware</li><li>– motor encoding electronics and software</li><li>– participation to international conferences</li></ul>                              |
| 2010 - 2012    | <b>Software engineer at INRIA, MOAIS group (fixed term, 2 years)</b> <ul style="list-style-type: none"><li>– Programming high performance multicore and heterogeneous architectures<ul style="list-style-type: none"><li>– XKAAPI runtime design and implementation (<a href="http://kaapi.gforge.inria.fr">kaapi.gforge.inria.fr</a>)</li></ul></li><li>– lead engineer in partnership involving CEA Saclay, ANR REPDYN</li><li>– implementation of a compiler to support parallelism constructs</li><li>– participation to HPC international conferences</li></ul> |
| 2009           | <b>Embedded firmware developer at Luceor (mission, 3 months)</b> <ul style="list-style-type: none"><li>– 802.11 Mesh Networking<ul style="list-style-type: none"><li>– Linux kernel software for Atheros Mips System On Chip</li></ul></li></ul>   |
| 2007 - 2009    | <b>Software engineer at Skyrecon Systems (2 years)</b> <ul style="list-style-type: none"><li>– Disk encryption solution (bios, driver)</li><li>– Network development (NDIS kernel layers)</li><li>– Windows kernel security research</li></ul>   |
| 2006           | <b>Embedded developer at Euriware (intern, 6 months)</b> <ul style="list-style-type: none"><li>– Industrial serial buses data logger<ul style="list-style-type: none"><li>– Linux kernel driver, PC104 architecture</li><li>– TCP/IP data server and client</li></ul></li></ul>  |
| 2008 - 2012    | <b>Teaching lectures. EPITA</b> <ul style="list-style-type: none"><li>– Microkernel project</li><li>– Windows NT drivers courses</li><li>– CAN, USB courses</li></ul>  |

## Publications and Reports

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2010 - 2013

- *RASHPA : a Data Acquisition Framework for 2D X Rays Detectors*
  - F. Le Mentec, P. Fajardo, C. Herve, A. Homs, T. Le Caer
  - ICALEPCS 2013
  - [www.icalepcs2013.org/programs/abstract\\_details.php?id=TUMIB07](http://www.icalepcs2013.org/programs/abstract_details.php?id=TUMIB07)
- *The X-Kaapi's programming model and User's manual*
  - F. Le Mentec, T. Gautier, V. Danjean
  - Technical Report INRIA, 2011.
- *A Work Stealing Algorithm for Parallel Loops on Shared Cache Multicores*
  - M. Tchiboukdjian, V. Danjean, T. Gautier, F. Le Mentec and B. Raffin
  - Highly Parallel Processing on a Chip (HPPC). 2010
  - [moais.imag.fr/membres/marc.tchiboukdjian/pub/hppc10.pdf](http://moais.imag.fr/membres/marc.tchiboukdjian/pub/hppc10.pdf)
- *Adaptive Algorithms for Shared Cache on Multicore*
  - M. Tchiboukdjian, V. Danjean, T. Gautier, F. Le Mentec, B. Raffin
  - Research Report, (RR-7256) :17, INRIA, apr 2010
  - [hal.inria.fr/inria-00473617/PDF/RR-7256.pdf](http://hal.inria.fr/inria-00473617/PDF/RR-7256.pdf)
- *Technical Blog*
  - [www.embeddedrelated.com/blogs-1/nf/fabien\\_le\\_mentec.php](http://www.embeddedrelated.com/blogs-1/nf/fabien_le_mentec.php)

## Associative Experience

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2010 - 2011

### **IGREBOT Robotic Association**

- [www.igrebot.fr](http://www.igrebot.fr)
- EUROBOT competition
- main boards : Renesas/RX62N and SBC2410/ARM
- engine control and IO boards : DSPIC33F, DSPIC30F
- CAN and I2C communication

2010

### **ACONIT Association**

- [www.aconit.org](http://www.aconit.org)
- PIC18F USB device to interface PC and mechanical tape readers
- project documentation and repositories :
  - [www.aconit.org/collection/documation-usb](http://www.aconit.org/collection/documation-usb)
  - [github.com/texane/documation\\_m600](https://github.com/texane/documation_m600)
  - [github.com/texane/slosyn](https://github.com/texane/slosyn)

2006

### **EPITA system and security laboratory**

- microkernel project
- system and security teaching assistant

## Open Source Projects

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### **STLINK : STM32 discovery line Linux programmer**

- [github.com/texane/stlink](https://github.com/texane/stlink)
- >500 users, >100 contributors

### **BANO : Internet of Things platform**

- [github.com/texane/bano](https://github.com/texane/bano)
- Low power consumption nodes (down to 200uA)
- ATMEGA328P and NRF905 (433 MHz)
- Beagle Bone Black base station, HTTP enabled

### **VPCIE : PCIe endpoint virtualization**

- [github.com/texane/vpcie](https://github.com/texane/vpcie)
- OHW2013 slides at [www.ohwr.org/attachments/2462/vpcie.pdf](http://www.ohwr.org/attachments/2462/vpcie.pdf)

## Skills

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### Software

- Programming languages : C/C++, Java, Assembly, Python, VHDL
- Kernels : Linux, Windows NT, realtime kernels
- Parallelism : OpenMP, TBB, CUDA. hybrid architectures (ex : NUMA, 96 cores, 8 GPUs)
- Scientific : Matlab, linear algebra, image and signal processing, classification algorithms

### Architectures

- Microprocessors : IA32, ARM (AM335x and CORTEX series), SPARC
- Microcontrollers : MIPS SoC, Microchip PICs, Renesas RX62N, AVR
- FPGAs : Xilinx VIRTEX and KINTEX series

### Electronics

- schematics design, board routing (2 layers), soldering
- components sourcing (power supply, analog digital ...)
- signal conditioning and filtering
- interfacing (bus transceivers, sensors ...)

### Networking

- TCP-IP, IPv6, Ethernet, 802.11, RF, SDR
- PCIe, 10GbE, USB, CAN, I2C, SPI, industrial buses (MODBUS ...)
- Protocol design and implementation for resource constrained applications
- Security : cryptography, software and network reverse engineering

### CAO

- electronic circuit design (EAGLE) and simulation (LTSPICE)
- SOLIDWORKS
- CNC milling, laser cutting

## Languages

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### French

Mother tongue

### English

TOEIC (gr. 800), good written and spoken skills (esp. technical materials)

### German

Notions