

**Fabien Le Mentec**

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May, 17th 1984

French nationality

# Research and Development 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>Research and development engineer at ESRF</b> <ul style="list-style-type: none"><li>- design and implementation of a data acquisition framework for 2D XRay detectors<ul style="list-style-type: none"><li>- PCIe over cable and 10Gbe FPGA based DMA engine</li><li>- high performance LINUX software stack and drivers</li><li>- embedded LINUX system for in house acquisition and control platforms</li></ul></li><li>- participation to XRAY instrumentation international conferences</li></ul>   |
| 2010 - 2012    | <b>Research and development engineer at INRIA, MOAIS group (2 years)</b> <ul style="list-style-type: none"><li>- Programming high performance multicore and heterogeneous architectures<ul style="list-style-type: none"><li>- XKA-API runtime design and implementation (<a href="http://kaapi.gforge.inria.fr">http://kaapi.gforge.inria.fr</a>)</li><li>- GPU NVIDIA programming with CUDA</li></ul></li><li>- implementation of a compiler to support parallelism constructs in C/C++/Fortran</li><li>- lead engineer in partnership involving CEA Saclay, ANR REPDYN</li><li>- participation to HPC international conferences</li></ul> |
| 2009           | <b>Research and development contractor at Luceor (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>Research and development engineer at Skyrecon Systems (2 years)</b> <ul style="list-style-type: none"><li>- Design and implementation of a disk encryption solution for Windows systems<ul style="list-style-type: none"><li>- low level layers (bios, driver)</li></ul></li><li>- Network development<ul style="list-style-type: none"><li>- network programming at the NDIS layer</li></ul></li><li>- Windows kernel and security related research<ul style="list-style-type: none"><li>- Intel VT virtualization</li><li>- AFD kernel vulnerability, CVE-2008-3464</li></ul></li></ul>   |
| 2006           | <b>Embedded developer at Euriware (intern, 6 months)</b> <ul style="list-style-type: none"><li>- design and implementation of a serial data sensor<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 - present | <b>Teaching lectures. EPITA</b> <ul style="list-style-type: none"><li>- Micro Kernel project</li><li>- Windows NT drivers course</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
  - [http://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
  - <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
  - <http://hal.inria.fr/inria-00473617/PDF/RR-7256.pdf>
- *Programmation Hybride avec XKAAPI*
  - LOGPROG Workgroup presentations (2010 and 2011)

## Associative Experience

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2010 - 2011

### **IGREBOT Robotic Association**

- <http://igrebot.fr>
- designing a robot for the EUROBOT competition
- embedded software development
  - CAN and I2C communication
  - main boards : Renesas/RX62N and SBC2410/ARM
    - technical report : <http://www.renesasrslz.com/docs/DOC-1764>
  - engine controlling and IO boards : DSPIC33F, DSPIC30F
- simulation software (C++, multithreaded)

2010

### **ACONIT Association**

- <http://www.aconit.org>
- design and implementation of a PIC18F USB device to interface a PC and mechanical tape readers
- in charge of firmware and software development
- project documentation : <http://www.aconit.org/collection/documentation-usb>
- source repositories :
  - [https://github.com/texane/documentation\\_m600](https://github.com/texane/documentation_m600)
  - <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**

- <https://github.com/texane/stlink>
- >100 users, >10 contributors

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

- <https://github.com/texane/vpcie>

### **LFS : Linux From Scratch building system**

- <https://github.com/texane/lfs>

### **NRF : wireless audio using NORDIC chipsets and ATMEGA328P**

- <https://github.com/texane/nrf>

## Skills

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### Software

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

### Architectures

- microprocessors : IA32, ARM (esp. CORTEX M3 serie), SPARC
- microcontrollers : MIPS SoC, Microchip PICs, RX62N, AVR
- FPGAs : XILINX (ML605, KC705)

### Networking

- TCP-IP, IPv6, Ethernet, 802.11, mesh networking (OLSR)
- PCIe, USB, CAN, I2C, SPI, serial industrial buses (MODBUS...)

### Security

- symetric cryptography
- binary analysis, software and network reverse engineering

### Misc

- digital electronics
- CAO (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

School notions