Fabien Le Mentec
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May, 17th 1984
French nationality

Research and Development Engineer

Education

2008 **Master degree in computer science. EPITECH, Paris.**
2006 **Bachelor degree in computer science. EPITECH, Paris.**

Employment

2012 - present **Research and development engineer at ESRF**
- design and implementation of a data acquisition framework for 2D XRay detectors
  - PCIe over cable and 10Gbe FPGA based DMA engine
  - high performance LINUX software stack and drivers
  - embedded LINUX system for in house acquisition and control platforms
  - participation to XRAY instrumentation international conferences

2010 - 2012 **Research and development engineer at INRIA, MOAIS group (2 years)**
- Programming high performance multicore and heterogeneous architectures
  - XKAAPI runtime design and implementation (kaapi.gforge.inria.fr)
  - GPU NVIDIA programming with CUDA
  - implementation of a compiler to support parallelism constructs in C/C++/Fortran
  - lead engineer in partnership involving CEA Saclay, ANR REPDYN
  - participation to HPC international conferences

2009 **Research and development contractor at Luceor (3 months)**
- 802.11 Mesh Networking
  - Linux kernel software for Atheros Mips System On Chip

2007 - 2009 **Research and development engineer at Skyrecon Systems (2 years)**
- Design and implementation of a disk encryption solution for Windows systems
  - low level layers (bios, driver)
- Network development
  - network programming at the NDIS layer
- Windows kernel and security related research
  - Intel VT virtualization
  - AFD kernel vulnerability, CVE-2008-3464

2006 **Embedded developer at Euriware (intern, 6 months)**
- design and implementation of a serial data sensor
  - LINUX kernel driver, PC104 architecture
  - TCP/IP data server and client

2008 - present **Teaching lectures. EPITA**
- Micro Kernel project
- Windows NT drivers course
- CAN, USB courses

Publications and Reports

2010 - 2013

- *RASHPA : a Data Acquisition Framework for 2D XRays Detectors*
  - F. Le Mentec, P. Fajardo, C. Herve, A. Homs, T. Le Caer
  - ICALEPCS 2013
  - 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
- *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
- *Technical Blog*
  - www.embeddedrelated.com/blogs-1/nf/fabien_le_mentec.php

Associative Experience

2010 - 2011 **IGREBOT Robotic Association**

- www.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 : www.renesasrulz.com/docs/DOC-1764
  - engine controlling and IO boards : DSPIC33F, DSPIC30F
- simulation software (C++, multithreaded)

2010 **ACONIT Association**

- 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 : www.aconit.org/collection/documation-usb
- source repositories :
  - github.com/texane/documation_m600
  - github.com/texane/slosyn

2006 **EPITA system and security laboratory**

- microkernel project
- system and security teaching assistant

Open Source Projects

STLINK : STM32 discovery line LINUX programmer

- github.com/texane/stlink
- >300 users, >40 contributors

VPCIE : PCIe endpoint virtualization

- github.com/texane/vpcie

LFS : Linux From Scratch building system

- github.com/texane/lfs

NRF : wireless audio using NORDIC chipsets and ATMEGA328P

- github.com/texane/nrf

Skills

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

French	Mother tongue
English	TOEIC (gr. 800), good written and spoken skills (esp. technical materials)
German	School notions