Fabien Le Mentec
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May, 17th 1984
French nationality
Driver licence
Boat licence

Embedded systems engineer

Education

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

Employment

2012 - present **Embedded systems engineer at ESRF (permanent position)**
- Control and data acquisition for physics instruments
  - embedded systems electronics and software
  - high performance Linux software stack and drivers
  - realtime using ARM AM335x PRUs
  - HDL blocks for PCIe and 10GbE FPGA based hardware
  - participation to international conferences

2010 - 2012 **Software engineer at INRIA, MOAIS group (fixed term, 2 years)**
- Programming high performance multicore and heterogeneous architectures
  - XKAAPI runtime design and implementation (kaapi.gforge.inria.fr)
  - lead engineer in partnership involving CEA Saclay, ANR REPDYN
  - implementation of a compiler to support parallelism constructs
  - participation to HPC international conferences

2009 **Embedded firmware developper at Luceor (mission, 3 months)**
- 802.11 Mesh Networking
  - Linux kernel software for Atheros Mips System On Chip

2007 - 2009 **Software engineer at Skyrecon Systems (2 years)**
- Disk encryption solution (bios, driver)
- Network development (NDIS kernel layers)
- Windows kernel security research

2006 **Embedded developer at Euriware (intern, 6 months)**
- Industrial serial buses data logger
  - Linux kernel driver, PC104 architecture
  - TCP/IP data server and client

2008 - 2012 **Teaching lectures. EPITA**
- Microkernel project
- Windows NT drivers courses
- 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
- 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
- PIC18F USB device to interface PC and mechanical tape readers
- project documentation and repositories :
  - www.aconit.org/collection/documation-usb
  - 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
- >400 users, >100 contributors

BANO : Internet of Things platform

- 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
- OHW2013 slides at www.ohwr.org/attachments/2462/vpcie.pdf

LFS : Linux From Scratch building system

- github.com/texane/lfs

Skills

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

Hardware

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

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 (SPICE)
- SOLIDWORKS
- CNC milling, laser cutting

Languages

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