

Fabrice Belle

Driving license

43 years

Nationality : French

Accreditations : Secret Defense (FRANCE),

Secret NATO

## **Software Engineer System and Cybersecurity**

20 years of experience

### **Key Skills**

Software Development C, C++ under Linux  
System Development (OS), security and virtualization  
Development on embedded systems, bootloader (Uboot), OpenWRT  
Network Development, Internet box, xDSL, GPON, XGSPON  
Network Development DPDK, VPP, TREX  
System Development, low level and Real-Time OS  
Embedded Development IMX7, freeRTOS  
Linux Development ( driver, Xen, Qt5 applications)  
Build manager and QA (Git, test framework using Python)  
System administration (Linux)

Work for the defense in a secured environment and embedded field.

### **Work Experience**

02.2019 – 2021 : **Software Engineer at Guarani - mission at SFR**

Work on enterprise internet box.

Development on OpenWRT, QOS, PoC using DPDK/VPP

Activities :

- Work on existing box with a new development framework, on OpenWRT
- Box security improvement
- Work on XDSL
- Work on GPON (Fiber 1Gb) and XGSPON (Fiber 10Gb)
- Several PoC (Proof of Concept) for UCPE (Universal CPE), software packet acceleration with DPDK/VPP
- Development C / script Bash / Python
- Development Python to use packet generator TREX

05.2018 – 2018 : **Software Engineer at Guarani - mission at Til Technologies / Sorhea**

Security enhancement of Access Control solution on embedded module at Sorhea.

Activities :

- Adaptation of web Front-End (AngularJS)
- Development C++ / Qt5
- Platform security (HTTPS, certificates, 802.1X)
- ModBus-IP security
- Linux security, PAM, Cgroups
- Tests of web Front-End web with Selenium

Environment :

- Linux
- BuildRoot
- C / C++ / Qt5 / AngularJs

Development of an embedded solution for access control at Til-Technologies

Activities :

- Development C++ / Qt5, interface with hardware (QtSensor, QDBus)
- Card Bring-up on ARM CortexM4, RS-232, RS-485 and CortexM4 – CortexA7 communications

Environment :

- Embedded Linux
- Platform IMX7d
- FreeRTOS
- SVN, Redmine

2017 – 2018 : **Expert software engineer at Teamly Digital, Box Internet project**

Project with Vodia and Intel to develop Small Business Gateway with high speed internet (ADSL, Gigabit Ethernet and Fiber), WiFi, phone access (VoIP, DECT and POTS) with an integrated PABX.

Activities :

- NAND memory dump tool NAND (Uboot, Linux)
- add commands in Uboot
- adapt work on cryptographic library (tropicssl to mbedTLS)
- work on a library to custom firmware on production line (write date UBI partitions of the NAND)
- specification for test on factory line, Shenzhen China

Environment :

- Platform MIPS, MCU Texas Instrument (CC2640)
- Linux
- C
- Uboot, OpenWRT
- Git, GitLab, Redmine
- Scrum

2002 – 2017: **Software Engineer at Bertin Technologies – Industrial Innovation  
(department of Secured Systems)**

## 12.2016 – 2017 : **Build Engineer and test on project SHES**

Project with DGA to design a Real-Time secure OS on ARM-CortexA72.  
Linux and Xen build on ARM-CortexA.

Activities :

- Documentation and code versioning for Common Criteria and DO178 certifications.
- Build process for an ARM platform
- Automatic build of an embedded Linux, BuildRoot
- Platform ARM, Versatile Express (Juno r2)
- Documentation and code versioning, Git

Technologies:

- Platform ARM, Board Versatile Express Juno r2
- Linux
- C
- BuildRoot, Git, GitLab, Google Repo

## October - December 2016 – 2017 : **Build and test Engineer on CrossinG project**

Secured network filter solution based on PolyXène

Activities :

- CI GitLab
- Test framework written in Python

## 2005 – 2017 : **Software Engineer on the project PolyXène**

<http://www.polyxene.fr/> Development of a secure multi-level Operating System

2005-2017 :

- Linux building, use of 'Buildroot'
- Programming with Qt5
- Work on a test framework programmed in Python
- Linux distribution building, pbuilder, debootstrap, ...
- Development of a communication channel between a Linux kernel and a custom OS using the Xen interface
- Programming on the network layer in an OS, on the initialization phase
- Adapting an IKEv2 stack to another OS
- Tests coding in Python
- Preparation of demonstration for customers
- Development C/C++ of a module to manage VM
- Development C/C++ of a module for configuration management
- Development C/C++ of security policy management
- Development of a system of documentation production (DocBook)
- Specification phase

Positions :

- Software engineer
- System engineer

- Project manager (manage a team of 3 persons)

Technologies :

- programming under Linux
- programming using C, C++, Python, LUA, Java
- work on protocol IKEv2
- work on the network stack of a specific OS
- cryptography
- Linux distribution building

Specification and conception

UML modeling

Knowledge of the Common Criteria process

Development of an operating system

Mastery of the development process, build and configuration management (GIT)

Used to work with french administration (DGA, CELAR, ANSSI)

2002 – 2004 : **Software Engineer on an anonymisation software for INVS (medical)**

Technologies :

- programming under Linux
- programming under Windows, VisualStudio
- programming using C++, C, TurboPascal

04.2001 – 09.2001:

Internship at KINEO (Toulouse).

Movement Automatic Planification in a 3D environment.

06.2000 – 09.2000 :

Internship at Bull (Grenoble).

## Skills

**Technical :**

Expertise of C++

Expertise of C

Expertise of Python

Expertise of Unix and Linux

Expertise of GIT

Mastery of GIT, configuration management

Mastery of LUA and Ocaml

Mastery of HTML, Javascript, CSS, AngularJS

Mastery of Qt5

Mastery of Latex / DocBook / Markdown / reStructuredText

Knowledge of FreeRTOS

Knowledge in XML and XSLT

Knowledge of JAVA (JDBC, Swing, Applet, JNI, etc)

Knowledge of ADA

Knowledge of VRML

Knowledge of Scheme, Pascal, Lisp  
Mastery of Windows 95,2000,NT,XP

Tools: GitLab, RedMine, TestLink, Jira

Network: IP, TCP, UDP, HTTP, IPSec, IKE, DNS, DHCP, HTTPS, 802.1X

### **Functional:**

Work with the administration, Institut National de Veille Sanitaire

Work with the Defense, DGA, CELAR, ANSSI

## **Languages**

English : read, written, spoken fluently (3 month in USA)

German : school level

Spanish : rudiments

Chinese : rudiments

## **Education**

Formation « méthodes Agile » 2018

Formation « Développement sécurisé » 2018

Formation « Cortex A-72 » 2017

Formation « Driver Linux » 2016

Formation « Python et Qt5 » 2016

Cours d'anglais 2010 : passage du TOEIC (950/990)

Formation « Linux embarqué » 2009

Some MOOCs :

- OCaml programming (2016 - FunMOOC)
- AI for Robotics (2012- Udacity)
- [Image and video processing: From Mars to Hollywood with a stop at the hospital](#) (2013 – Coursera)
- Machine Learning (Coursera)
- Build Basic GAN , Getting start with TensorFlow 2 (Coursera 2020)
- Comprendre le cœur d'internet : les réseaux d'opérateurs, Les réseaux FTTH (funmooc 2020)
- Mathematics for Machine Learning – Imperial College (Coursera 2021)

2000 - 2001 :

DESS IRR(Intelligence Artificielle, Reconnaissance des formes et Robotique)

Université Paul Sabatier, Toulouse

1999 - 2000 :

Maîtrise d'Informatique, Université de Grenoble

1998 - 1999 :

Licence d'Informatique, Université de Grenoble

## Hobbies

Self Defense, Martial Art (Wing Tsun, Penchak Silat)

Sailing

Drawing

Traveling (3 months in USA, 4 months around the Mediterranean sea, Thailand, China, Argentina, Australia...)