

Colin Guyon, Software Engineer

{ Web Full Stack & WASM / UI Embedded / Connected objects / Robotics }

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PROFESSIONAL EXPERIENCE

- **Software Engineer, simulation softwares in the medical field | InSimo** 2018 - 2024 (in position)
 - Team player in an agile environment, contributing to biomechanical simulation softwares for surgical training and education
 - Offline-First app with cloud synchronization, JavaScript (ES6), Electron, Vue.js, Jest, Node.js, CouchDB + PouchDB, JSON Web Token, Nginx + Lua ...
 - Online ultrasound simulator, for the diagnosis of COVID: [diSplay by InSimo](#)
 - WebAssembly (C++ → Web) (Emscripten)
 - Python, C++, SOFA Framework (for physics-based simulations), distributed compilation, CMake, FASTBuild
 - Git, unit testing, continuous integration... DevOps: Docker, Linux servers
- **Embedded Software Engineer, UI & Middleware, Linux, digital TV | Wyplay** 2010 - 2018 (7.5 years)
 - Team player in an agile environment, working for worldwide operators: Vodafone, SFR, R, Proximus, CANAL+, SKY, AT&T ...
 - UI tech. leader / Python referent. Conception of a MVC framework and associated tools. Python applications, embedded in set-top-boxes / media-centers. Web applications for some clients (JavaScript / HTML 5 / CSS 3)
 - Middleware development in C/C++, and REST server in Python
 - Android: AOSP / Java / JNI / PyJnius
 - Conception, development, maintenance of components. Code reviews, continuous integration ...
 - Version control: Git and Mercurial
- **Engineer application internship (Linux embedded, UI, digital TV) | Wyplay** 2010 (6 months)

Within UI team, optimisation and enrichment of the applicative and graphic framework. Embedded Linux environment, Python language.
- **Software development internship | Ifremer (French research institute for sea exploitation)** 2009 (4 months)

Development of a data management system and aiding of underwater glider remote piloting. Python programming, JABBER / XMPP protocol, Linux.

EDUCATION

- 2006 - 2010 **Engineering school | ISEN Toulon, France (Superior Electronics and Numeric Institute)**

2nd year of preparatory class, followed by the engineer curriculum, broad-based to begin, then with a strong emphasis on informatics and digital electronics.
Last year specialism: software engineering in information systems.
- 2005 - 2006 **Preparatory class | CIV, France (International Center of Valbonne)**

Mathematics, physics, chemistry and engineering sciences.
- 2002 - 2005 **Jean Moulin High school (Draguignan, France): Scientific Baccalaureat (mathematics speciality)**

SKILLS

- **Python 2 / 3**, **Cython** OOP, Embedded Linux, **UI**, **Web backend** and **REST server (Flask** - similar to Django, **SQLAlchemy**, **Jinja**, **Bottle**), Kivy, ctypes, PyJnius, pytest, mock, Jupyter Notebook, Web scrapping Profiling, optimization, memory leaks tracking, development of tools ...
- **C**, **C++** Embedded middleware, UI, microcontrollers. GDB, Valgrind ...

SKILLS (continuation)

- **Linux** At work (ideally) and personal environment
- **JavaScript, HTML 5, CSS 3** Embedded or desktop web apps and websites. **ES6, Node.js, Express, Vue.js, React, Jest, Electron, Babel, Webpack, Stapes, Promise, lodash...** and "vanilla" JavaScript
- **WebAssembly**, allowing to bring C/C++ to the Web. **Emscripten**.
- **Java**, especially **Android applications**
- Graphic design and implementation of graphical user interfaces: **2D & 3D UI** using **Python, C, OpenGL, Web FrontEnd ...**
- **SQL databases** SQLite, MySQL, ... and **NoSQL** MongoDB, CouchDB
- **Git** and **Mercurial**
- **Microcontrollers** dsPic, Arduino and similar, ESP32 (WiPy), nRF52832 (BLE Nano v2), nRF52840... C, C++ or MicroPython.
- **Raspberry Pi** (personal projects using Python / C / Cython).
- **I2C, SPI, UART, PWM, analog peripherals and sensors**: accelerometer, gyroscope, light, temperature, motion (PIR), distance (IR), rotary encoder, capacitive switch, LED driver, servo drive, 7 segments display, **Bluetooth, Bluetooth LE (low energy)**.
- PHP
- Image editing / processing / creation. Good knowledge of Adobe **Photoshop**.
- **English frequently used at work**. TOEIC (885 points) as well as FIRST Certificate of Cambridge (European level: B2) during my engineering curriculum.
- **Agile methodologies**

PERSONAL PROJECTS

- **2020 Connected thermostat (K-thermocouple, up to ~1300°C) for a small ceramics oven**. Raspberry Pi Zero W, Python & Sanic Web server, VueJS. Control and clear definition of the firing program of the ceramics with a curve, from any device (smartphone, computer...).
- **2019 Connected photo frame and dashboard** (still ongoing). Raspberry Pi, touch screen, Python, Kivy UI framework. Remote sensors with ESP32 microcontroller (Pycom WiPy 3), MicroPython, Bluetooth LE (low energy).
- **2018 Website for an agency specialized in engineering of buildings**. **JS / HTML 5 / CSS / SVG** (Front-End) & **Python / Flask / Jinja2 / SQLAlchemy / SQLite** (Back-End).
- **2016 - 2017 Creation of an interactive lamp**, with brightness management depending on the position of the hand of the user. Arduino (Trinket), C/C++, infrared distance sensor, PIR motion sensor.
- **2016 - 2017 Creation of a wooden tactile lamp**, with motion sensing. Arduino, C/C++, 3W LED and RVB LED, EEPROM.
- **2016 - 2022 Creation of a connected luminous alarm clock**, controllable with a smartphone Android app and Bluetooth connection. Wooden casing, 3W LED, digital display, temperature and motion sensors, music player, light beats according to bass/medium/trebles (optimized calculation of FFT in C thanks to GPU_FFT), Bluetooth LE remote actions ...
Python / C / Cython / Android native application / Raspberry Pi
See details on wakepiup.colinguyon.com.
- **2013 Website for an urbanism agency**: habitatetsociete.fr. **HTML, CSS, JavaScript, Python backend: Flask, SQLAlchemy, Jinja2**.

PERSONAL PROJECTS (continuation)

- 2010 My new photography website: photo.colinguyon.com. **HTML, CSS, JavaScript, jQuery, AJAX & JSON, PHP 5, SQL database.**
- 2009 **Creation of a RGB lamp with dsPic microcontroller.** Color change by inclination with 3-axis accelerometer, Bluetooth PC connection with a Java software: LED management depending on sound.
- 2009 Website for an urbanism agency: PHP, MySQL, XHTML, CSS, JavaScript, AJAX.
- 2007 My first photography website: colin.guyon.free.fr/photo. XHTML, CSS, JavaScript.

ENGINEERING SCHOOL PROJECTS (ISEN Toulon, France)

- 2009 - 2010 **5th year project:** integration and evolution of a services platform aimed at proposing to the ISEN students web services such as SVN server, wiki, blogs... **Linux environment.** Study and integration of software components, such as Zimbra.
- 2009 - 2010 **Java projects, working in teams:**
 - IRC chat client/server (level 3 CMMI project, team of 5 persons). **Java + OpenGL (JOGL)** UI. Communication protocol based on serialized objects.
 - Paint, web server ...
- 2009 **4th year technical project (5 persons team):** realization of a **Quadcopter**, controlled by computer using **Bluetooth**. Creation of the **2D + 3D** graphic interface of the control software using **Java + OpenGL (JOGL)**. Live visualization of the orientation of the helicopter with a 3D model. Management of sent/received data.
- 2009 **Project for Junior-ISEN-Toulon:** realization of the multilingual website of a winemaker, using PHP, MySQL, XHTML, CSS, JavaScript and AJAX, with an administration interface: client management, image gallery...
- 2008 - 2009 **Low-level graphical optimization project.** Aim: create a graphical animation in **C + OpenGL**, then optimize it to increase the FPS as much as possible while keeping an identical rendering compared to the non-optimized version. Best project.
- 2008 - 2009 **ISD at the students' union.** Conception and realization of the association's website (PHP, MySQL, XHTML, CSS, JavaScript, AJAX).
- 2007 **Technical project in electronics (4 persons team):** realization of a heart beat meter (the usage of a microcontroller being forbidden).
- 2007 **Technical project in informatics (4 persons team):** realization in **C** of a fish simulation software with predators and baits. Realization of the UI using **2D + 3D OpenGL**, and integration of the modules including the physic engine.

PERSONAL INTERESTS AND LEISURE ACTIVITIES

- Photography: photo.colinguyon.com
- Electronic creations and "DIY", design and objects creations, handy man tasks (in particular: wakepiup.colinguyon.com)
- Windsurfing, sailing, climbing, biking
- Sciences, ecology, low techs
- Drawing, watercolor, pottery (beginner)
- Music, Guitar
- Github profile: github.com/colin-guyon