



Maxime Clement

IoT Engineer

A Mix of Hardware, Software & Web Technologies



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SKILLS (in brief)

Design of Cloud Architectures

Cloud Applications Programming

Embedded-Systems Programming

Electronic Circuits Design

Linking Embedded-Systems with Cloud App

DevOps Culture and Automation

Project Management and Presentations

EDUCATION

M. Sc. Generalist Engineer

ESSTIN Engineering School, Nancy, France
Multidisciplinary Engineer Diploma,
Specialization in Systems Control
2014

M. Sc. in Embedded Systems & Energy

Université de Lorraine, Nancy, France
Master's Degree in Embedded
Microelectronics Engineering
2014

ABOUT

Software Engineer specialized in IoT (Internet of Thing), I have developed software and managed projects for more than 8 years. My specialty as well as one of my passions lies in the integration of electronic devices and machines into the web by the architecture and development of software. It usually involves the design of cloud applications, firmware, and sometimes the creation of circuits, and mobile/web applications. For more details on my **projects** and **skills**, please visit my website on www.maximeclement.com

PROJECTS (relevance order)

LoraWan Enabled Wristwatch for Online Health Monitoring with Serverless Architecture - 2021/22

Objective: Monitoring a large group of individuals (>200) outdoor, with a low-cost, autonomous and web connected device.

- Serverless Cloud Application (AWS-CDK), user/device management, data storage and security, continuous integration, auto-scaling, Typescript, SQL
- HTTP REST API and LoraWan for communication with Data and Control Plan
- Circuit made with Altium Designer and programmed in C
- Mobile App made with Flutter for semi-real-time data display

IoT/IIoT Cloud platform for connected devices – 2022

Objective: Design of a platform to manage and secure connected systems, while being scalable, cloud-agnostic, open-source.

- Containerized application (Docker), with services written in Go
- Distributed system with message queue, REST APIs, databases, caches
- Communication with MQTT, HTTP, GRPC, WebSocket
- Data encryption and secure communication with a reverse proxy

Thread Mesh Enabled Wristwatch with Full-Stack Application, Health Monitoring – 2018/19

Objective: Gathering and analysing vitals signs of a medium group of individuals (<100) indoor with mesh connected device linked to a cloud application.

- REST API with Express and MongoDB, Typescript
- Thread Mesh enabled microcontroller (IEEE 802.15.4, CoAP protocol)
- Dense PCB with heart rate and temperature sensor, made with Eagle
- Web app made with Angular for data display and management

Door Monitoring Wi-Fi Device with Embedded UI - 2021

Objective: Personal project aiming to monitor the activity/movement of an object (ex: a door) to receive notifications defined with an UI integrated to the system, communicating to a cloud application through Wi-Fi.

- Microcontroller Wi-Fi (ESP32 with Espressif SDK), MQTT protocol, in C++
- Serverless cloud application (AWS CDK), Typescript, SQL
- PCB with LCD (Embedded UI with LVGS), various sensor/actuators

PATH

2016 - Present

IoT Engineer & Laboratory Manager

HBKU University, Doha, Qatar

2013 - 2015

Research Engineer

Loria, Nancy, France

2013

Graduation from ESSTIN

University of Lorraine, Nancy, France

My passion for Electronics, and later on cloud computing, started in Sweden in 2013 during a student exchange program (ERASMUS) where I studied embedded systems and project management.

PROJECTS (following)

Bluetooth Face-Mask with Companion App - 2019/2020

Objective: Creating a generic platform to test and demonstrate our printed sensor, integrated to a mask, to analyse respiration gas.

- Bluetooth BLE microcontroller (Nordic NRF and its SDK)
- Compact PCB with analog filter, made with Altium Designer
- Mobile App made with Flutter for Display, Bluetooth control and DSP

Neural Activity Recording Device for Rats - 2014/15

Objective: Acquiring the neural signals of a rat with a light head mounted device and transmitting data wirelessly toward analytic tools, low-cost and open source.

- Multi-stage PCB (Acquisition, processing, RF transmission), with Eagle
- Microcontroller STM for compression and system supervision, code in C
- Wireless reception station and USB transmission or DAC signal recreation

Other Projects and Experiences - 2017/22

- Creation and teaching of a processors design lab course (Verilog)
- Creation and management of a computer science & electronic laboratory
- Robot arm control system, Line following robots, motor pump control, LED panel control, FPGA course writing and teaching, python web crawler, heart-rate monitoring device, mechanical test-bench, and others...

Web Technologies, Backend

- JavaScript/TS, Python, Go
- Cloud computing with AWS and Heroku
- Scaling architectures with micro-services
- Data transport (MQTT, CoAP, HTTP, RPC, Sockets), data security (SSL/TLS, JWT encryption and hashing), devices fleet management
- Infrastructure as Code: AWS CDK
- SQL, Non-SQL, and Timeseries databases
- Serverless (CDK), containerized app (Docker)

Embedded Firmware

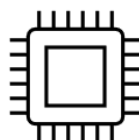
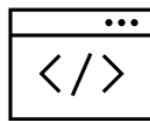
- Programming in C or C++
- Nordic Semi, STM, TI, Espressif, Atmel
- Algorithms design
- Linux with Single Board Computers
- Wireless Protocols: Bluetooth, Wi-Fi, LoraWan, Thread (802.15.04), Zigbee, Nordic Proprietary
- Digital signal processing, RTOS

Hardware Design, PCB and Flex-PCB

- Altium Designer and Eagle
- Strong knowledge of current hardware tech, components and PCB manufacturers

SKILLS

(details)



Other Techs

- Version control with Git
- Mobile apps with Flutter (Dart)
- Web apps with React (JS/TS, HTML/CSS)
- FPGA: Intel/Altera with Verilog
- CAD: Fusion360 and SolidWorks
- CI/CD: Gitlab, AWS CodePipeline

Project and Learning

- Project Management: Budgeting, Kanban & Boards methods, user requirements, report and documentation writing
- Adept of self-development and learning

Soft Skills

- Accustomed to multi-national environment
- Accustomed to present his ideas in group
- Taught lab courses to Ms. and PhD students

Languages

- French and English (similar levels)
- German (A2)

Leisure

- Guitar, mountain biking, tennis, motorcycling
- Coding challenges on [Codewars](#)

REFERENCES

Please contact me for an updated CV