Maxime Clement

IoT Engineer

A Mix of Hardware, Software & Web Technologies

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Doha / Qatar

31 years old

www.maximeclement.com

maximeclement-iot (LinkedIn)

pseudoincorrect (GitHub)

IoT Engineer Here!

IoT Engineer here! My specialty as well of one of my passions is to design electronic devices and link them to the web. It usually involves the design and test of a Printed Circuit Board (PCB), the development of its embedded firmware and the cloud application along with a mobile/web application. For more details, please visit my website on www.maximeclement.com

SKILLS (in brief)

Programming: C, Python, JavaScript/TS and SQL

Cloud Providers: AWS and Heroku

Backend: Serverless and Containerized Apps

µControllers: STM, Nordic, TI, Espressif, Atmel

Wireless Protocols: Bluetooth, Wi-Fi, LoraWan, Thread (802.15.04), and others…

Printed Circuit Board: Altium, Eagle

Management: Kanban/Board Methods, Git, Report and Manual Writing, Giving Presentations/Courses

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

PROJECTS (relevance order)

LoraWan Enabled Wristwatch for Online Health Monitoring with Serverless Architecture - 2020/21

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
- LoraWan enabled microcontroller (STM) for RF transmission, RTOS
- Multi-cards Rigid-Flex compact PCB made with Altium Designer
- Battery management, heart-rate sensor, two MCUs, RF antenna
- Mobile App made with Flutter for semi-real-time data display

Bluetooth Face-Mask with Companion App - 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

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, Nordic NRF)
- 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) , in C++
- Serverless cloud application (AWS CDK), Typescript, SQL
- Embedded UI with LVGS, intuitive and reactive
- PCB with touch LCD , RF module, accelerometer, vibration, batteries

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)

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

High Speed Wi-Fi Link for FPGAs - 2017

Objective: Link a FPGA to a console application via Wi-Fi Protocol

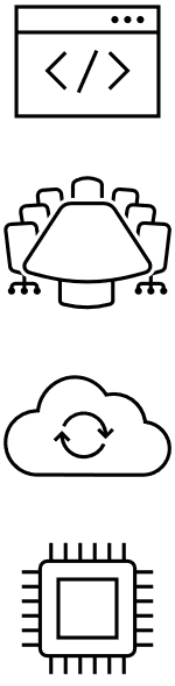
- Verilog architecture, and buffered communication FPGA/Module
- Wireless transmission via a Wi-Fi module (Texas instrument), code in C
- Testbench with a Bash application

Other Projects and Experiences - 2017/21

- Creation and teaching of a processors design lab course (Verilog)
- Creation and management of a computer science & electronic laboratory
- 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...

SKILLS

(details)



Embedded Firmware

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

Web Technologies, Backend

- Cloud computing with AWS and Heroku
- Rest API with Express and AWS
- Data transport (MQTT, CoAP, HTTP, Sockets), data security (SSL/TLS, JWT encryption and hashing technologies), devices fleet management
- SQL, Non-SQL, and Timeseries databases
- Serverless (CDK), containerized app (Docker) and edge computing (Linux and Greengrass)
- JavaScript/TS, Python, SQL

Hardware Design, PCB and Flex-PCB

- Altium Designer and Eagle
- Soldering, micro-soldering and rework
- Strong knowledge of current hardware tech, components and PCB manufacturers

Techs & Projects Related

- Project Management: Budgeting, Kanban/ Boards methods, user requirements, report and documentation writing
- Version control with Git
- Mobile apps with Flutter (Dart)
- Web apps with Angular (TS, HTML/CSS)
- FPGA: Intel/Altera with Verilog
- CAD: Fusion360 and Solidworks
- DevOps/Admin Automation

Soft Skills

- Accustomed to multi-national environment
- Adept of self-development and learning
- Accustomed to present his ideas in group
- Taught lab courses to Ms. and PhD students

Languages

- French and English (similar levels)

Leisure

- Musical improvisation on guitar
- Mountain biking, tennis, motorcycling
- Coding challenges on Codewars

REFERENCES

Please contact me directly for an updated CV.