Audio software engineer

C/C++, DSP, Machine Learning

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Professional Experience

2020 – **Devialet** – Paris – Audio DSP Technical Leader

Technical leader of a team of 6 audio embedded software developers.

- Maintained the core multi-platform and multi-projects audio DSP C library
  - Developed new features (graphic equalizer, parameter setting, mode switching)
  - Ported various audio algorithms from high-level languages (simulink and max/msp) in C
- Developed, tested and released DSP libraries for both Devialet products (Phantom, Dione, Mania) and external clients (e.g. Huawei speakers), on various targets (arm, ADSP, hexagon) and frameworks (SigmaStudio+, GStreamer)
- Improved significantly the test infrastructure
  - Developed several test tools: audio non-regression, unit tests, target emulation
  - Wrote a python test framework to ease the validation of C audio output against reference
  - Automated monitoring of CPU consumption, on ADSP and armv8 boards
  - Created a docker-based jenkins infrastructure for continuous integration and testing
- Refactored the GStreamer plugin wrapping the core lib, to be able to support any projects' variants
- Integrated tensorflow models into a C library mixing audio feature extraction and machine learning
- Wrote software specifications to external software suppliers
- Communicated with other Devialet teams (mostly middleware and signal processing teams)
- Recruited, conducted technical interviews and trained newcomers
- Prepared and gave several technical presentations across R&D teams: "Audio compression with FLAC", "Floating point arithmetic with IEEE754", "Audio clocks and resampling, from XTAL to ASRC"

2016 – 2019 **NXP Semiconductors Mobile Audio** – Leuven – Acoustics and Software Engineer

Prototyped and developed DSP algorithms for smart amplifiers (algorithms that maximize the audio performances of smartphones while protecting both the loudspeaker and the amplifier). Set up continuous validation of fixed point C firmware. Developed a python automatic tuning library for the firmware.

2015 6 months **Orange Labs** – Lannion – Final year master thesis on 3D sound

Compiled a bibliography on in-head localization with binaural synthesis. Developed a graphical tool for spectral design. Conducted listening tests to validate methods improving externalization.

2014 4 months **Centre for Digital Music, Queen Mary University of London** – Internship

Conducted interviews with professional sound designers and developed Max patches for voice analysis and sound production.

2013 6 months **Genesis** – Aix-en-Provence– Internship

Developed feature extraction tools for audio stationary signals (car engines' noises) and implemented classification algorithms for recognition of the speed and motor.

Education

2014 – 2015 **Laboratoire de Mécanique et d'Acoustique, CNRS** – Marseille – Master degree in Acoustics

Dual degree in Acoustics at the Laboratory of Mechanics and Acoustics.
Courses of interest: Fundamentals of Acoustics, Vibrations, Signal Processing, Psychoacoustics, Spatial hearing, Analysis/synthesis of sounds.

2011 – 2015 **École Centrale de Lille** – Engineering school Master of Science Degree

Three-year course and one professional intercalated year. Majors in Mechanics, Computer science, Signal processing, Electronics, Project Management and Economy.

Skills

Languages **French** (native), **English** (fluent) and **Spanish** (intermediate).

Software **Methodologies:** Scrum (JIRA), peer review, continuous testing, test-driven development, version control

Programming languages: C, C++ (17), Python, Rust, MATLAB, JavaScript, Shell

Technologies: Python (scipy, numpy, pandas, pytest, threading), GStreamer, Max/MSP, meson, CMake, Git, gcc, Clang, Valgrind, ASan, gcov, QEMU, jenkins, docker (including compose, registries), Linux, MangoDB, REST, RTP, SigmaStudio+, AudioWeaver, Qualcomm Hexagon, Raspberry Pi