



Domenico Stefani, Ph.D.

Postdoc researcher in music technology

Nationality: Italian
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HIGHLIGHTS OF QUALIFICATIONS

- Audio Software Developer – Audio AI researcher,
- Ph.D. in Computer Science/Music Technology with a thesis on real-time Music Information Retrieval via Deep Learning on embedded computers,
- 4+ years of experience in VST Audio Plugin development with C++ and the JUCE framework,
- Strong computer science and software development foundation (Bachelor and Master degree in Computer Science).

EXPERIENCE

01/2024 - Current **Postdoctoral Researcher** – *University Of Trento* – Trento, Italy

Research on music information retrieval, new interfaces for musical expression and spatial audio.

- Improved by up to 300% the efficiency of a 6DoF Convolution VST Audio Plugin (SPARTA 6DoFConv) with an efficient convolution engine and crossfade mechanism,
- Developed several VST audio plugins with modern C++ and the JUCE framework,
- Improved CMake build processes for 2 open source projects (e.g., added VST3 support),
- Developed and enacted a live experimental music performance with MaxMsp, Flucoma, and Rave.

05/2024 - 07/2024 **Audio Developer (Intern)** – *Elk Audio* – Stockholm, Sweden

• Developed efficient multichannel audio convolution software for spatial audio and reverberation.

01/2024 - 05/2024 **Audio Developer (Freelance/Contract)** – *University of Parma Remote*, Italy

- Collaborated with a team of researchers on defining requirements for the customization of audio plugins used in research,
- Implemented graphical and functional modifications to existing audio plugins.

2020 - 2024 **PhD Student** – *University of Trento* – Trento, Italy

- Real-time audio analysis with Deep Learning, Music Information Retrieval, Plugin Development
- **See details below in the EDUCATION section.

2020 - 2023 **Teaching assistant** – *University Of Trento* – Trento, Italy

- Technologies taught: Python, Processing, Arduino/Teensy, basic electronics

06/2018 - 07/2018 **Computer Programmer (Intern)** – *Vivica S.r.l.* – Marostica, Italy

- Developed a small communication protocol to configure network devices via UDP broadcast,
- Implemented an Android app (Java) to interface with the native client program (C/C++).

EDUCATION

2020 - 2024 **PhD in Information and Communication Technology** – *University of Trento*

Completion/conferral date: 11 Jan 2024

Thesis: Embedded Real-time Deep Learning for a Smart Guitar: A Case Study on Expressive Guitar Technique Recognition

Technical skills developed:

- Audio Plugin development with C++ and the JUCE framework,
- Audio signal processing and feature extraction,
- Deployment of plugins to Embedded devices (RPI 4) with Elk Audio OS,
- Tensorflow + Python programming for Music Information Retrieval,
- Neural network inference in C++ (TensorFlow Lite, Libtorch/Torchscript, ONNX Runtime, RTNeural).
- Academic Writing (English, Two C1 Courses attended and passed with full marks).

2023 **Visiting Researcher** – *Centre for Digital Music, Queen Mary University of London* – London, UK

Six months-long collaboration as a visiting researcher.

- Deployment of audio plugins to *embedded* single-board computers, including deep-learning inference,
- Offline emotion recognition, with framewise classification on seconds-long frames,
- Use of large deep learning models for music (modified MusiCNN),
- Use of the Essentia Library for feature extraction (Python and C++),
- Real-time audio processing (e.g. Silence detection, resampling),
- Conducted user studies with professional musicians.

2018 - 2020 **Master degree in Computer Science** – *University of Trento*

Final grade: 110/110 cum laude

Thesis: Embedded real-time classification of percussive and pitched sounds on a smart guitar

The thesis topic involved real-time feature extraction and classification of audio signals and C++ development for audio DSP.

Relevant Courses:

- Multisensory Interactive Systems,
- Deep Learning,
- Machine Learning,
- Bio-Inspired Artificial Intelligence.

Projects:

- Objective music evaluation and automatic generation of music scores using machine learning,
- Evolutionary/Genetic optimization of initial configurations for the Game of Life,
- Prototype of an Audio/Video synthesizer for two users.

2015 - 2018 **Bachelor in Computer Science** – *University of Trento*

Final grade: 105/110

- C/C++ Imperative programming
- Object-Oriented Programming
- Database management
- Software Engineering
- Web programming
- Algorithms, Machine Learning and Compilers

TECHNICAL SKILLS

- Python Tensorflow/Pytorch and inference deployment through TFlite, Torchscript, ONNX Runtime, RTNeural,
- Audio plugin development (JUCE framework) for Windows/Mac/Linux and Embedded Linux (Arm64 RPi),
- CMake,
- Code versioning (Git/GitHub),
- Quick prototyping with Puredata, MaxMsp, Flucoma,
- Python and Bash scripting for task & test automation,
- HTML/Css frontend development.

LANGUAGE SKILLS

English: C1 level | **Italian:** Mother tongue

Advanced formal writing skills, proven by the record of academic publications.

Developed strong verbal communication and active listening skills through internships across Europe, including in England, Sweden, and Northern Ireland.

PUBLICATIONS

A list of peer-reviewed publications can be found at the following link/QR Code:



domenicostefani.com/cv/publist.pdf

CERTIFICATIONS

- Dante (Audinate) Certifications for Level 1, 2 & 3.

