

MICHELE PERRONE



Programmer, musician, audio and open source enthusiast

CONTACT

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SKILLS

Programming

C 
C++ 
Python 
MATLAB 
C# 
Java 
HTML/CSS/Js 
LaTeX 

Main Programming Libraries

C Standard Library, C++ Standard Library, JUCE, Qt, GNU Scientific Library, NumPy, SciPy, librosa, scikit-learn, TensorFlow, Keras







Integrated Development Environments

QtCreator, STM32 Cube IDE, Visual Studio, XCode, Eclipse

Operating Systems

GNU/Linux 
Windows 
MacOS 

Languages

Italian 
Czech 
Slovenian 
English (TOEFL 97/120) 
Russian 
Croatian 

WORK EXPERIENCE

📅 Nov. 2020 - Jun. 2021
📍 STMicroelectronics Italia
Research and Development Intern
I worked in the System Research and Applications department. My main job was designing tiny neural network architectures for microcontroller applications focused on direction of arrival with non-uniform antenna arrays.

TensorFlow Keras Python TinyML Bluetooth 5.1 MUSIC

EDUCATION

📅 2020 - current
📍 Politecnico di Milano (Italy)
Master of Science
Music and Acoustic Engineering
My studies are mainly focused on signal processing, acoustics of musical instruments, physical modeling, spatial audio, psychoacoustics, and machine learning.
Current grade average: 29.3/30

📅 2017 - 2020
📍 University of Maribor (Slovenia)
Bachelor of Science
Computer Science and Information Technologies
Bachelor Thesis: "An Overview of Selected Pseudo-Stereophonic Techniques"
Grade average: 9/10, thesis grade: 10/10

📅 2013 - 2015
📍 University of Udine (Italy)
Electronic Engineering
Nine exams taken: General Physics I, General Physics II, Basic Mathematics, Mathematical Analysis I, Linear Algebra, Operations of Computer Systems, Fundamentals of Computer Programming, Methodologies of Logic Synthesis.

📅 2008 - 2013
📍 Classical Lyceum "Paolo Diacono", Cividale del Friuli (Italy)
High School Diploma
Classical Diploma
Final grade: 92/100

COMPLEMENTARY EDUCATION

📅 2002 - 2016
📍 Music School "Glasbena Matica", Trieste (Italy)
Three exams taken at the Conservatory of Music "Jacopo Tomadini", Udine:

- 2013: Level I pre-academic exam, opera singing
- 2012: Level II pre-academic exam, piano
- 2011: Music theory and Solfeggio Licence

GENERAL SKILLS AND AREAS OF INTEREST

Signal Processing Sound Synthesis Psychoacoustics
Physical and Virtual Analog Modeling Audio Restoration
Embedded Systems Machine Learning Problem-solving
Team Working Creativity GNU/Linux Operating Systems
Opera Singing Piano Languages Analog Photography


PUBLICATIONS




Constrained Neural Estimation of Bluetooth Direction of Arrival with Non-Uniform Arrays

 M. Perrone, D.P. Pau, N.I. Piazzese


 2022  IEEE International Conference on Consumer Electronics (ICCE)  [DOI](#)

Dataset for Bluetooth 5.1 Direction of Arrival with non Uniform Rectangular Arrays

 N.I. Piazzese, M. Perrone, D.P. Pau


 2021  ScienceDirect Elsevier - Data in Brief  [DOI](#)

An Overview of Selected Pseudo-Stereophonic Techniques

 M. Perrone

 2020  Bachelor Thesis (University of Maribor)  [COBISS, DKUM](#)

Passive Floating Probe

 M. Perrone, U. Knupleš, M. Žalik, V. Keršič, T. Šinko

 2019  Proceedings of of the 2019 6th Student Computer Science Research Conference  [DOI, ISBN](#)

PROJECTS

[Open Piano](#)

An open source real-time piano engine and JUCE plugin based on physical modeling. The synthesis engine implements the differential equation of a lossy piano string, hit by a hammer.

[C](#) [C++](#) [MATLAB](#) [JUICE](#) [Finite Differences Equations](#) [Physical Modeling](#)

[Open B3](#)

Open B3 is a sound synthesis engine and JUCE application/plugin that simulates the magnificent sound of the Hammond B3 organ and Leslie rotating speaker. The project started as a rework of [setBfree](#), an open-source DSP tonewheel organ emulator that is available only as an LV2 plugin or JACK standalone application.

[C](#) [C++](#) [JUICE](#)

[Open Midi Surface](#)

Open Midi Surface aims at creating a universal USB MIDI controller built upon the STM32F3 series MCUs.

[C](#) [Embedded Systems](#) [MIDI](#) [USB](#)

[Spectrogram Player](#)

The goal of this project is to compare data-driven (e.g., CNN-based) and hand-crafted (e.g., Griffin-Lim algorithm) solutions to reconstruct audio waveforms starting from a spectrogram (i.e., STFT magnitude with no phase information). Evaluations are performed on different audio genres including speech, music and urban sounds.

[Python](#) [Deep Learning](#) [Digital Signal Processing](#)

[Shadow Sync Project](#)

Shadow Sync Project is an interactive installation with the aim of finding a connection between people through their body movements.

[C++](#) [Python](#) [OpenFrameworks](#) [OSC](#) [MediaPipe](#)

[Synesthetic](#)

The goal of Synesthetic is to create a colorful and dynamic visual representation of a rhythmic musical piece. Synesthetic is able to process both polyrhythmic and polymetric tracks and creates a visual experience that is pleasant and informative at the same time.

[JavaScript](#) [Python](#) [Flask](#) [p5.js](#)