

# Matteo Pettenò



## PROFILE

I am an engineer with a strong foundation in information theory, earned during my Bachelor's degree at the University of Padova, and a deep passion for audio that led me to pursue a Master's degree in Music and Acoustic Engineering at Politecnico di Milano. During academy I gained a solid understanding of deep learning, machine learning, control systems, signal processing, and electronics. Alongside my studies, I have continuously advanced my professional development, working in the IT sector as a full-stack developer, software architect, and DevOps engineer.

## SKILLS

- Python, C++, MATLAB, GLSL, JAVA, SQL, JS, CSS
- Keras, Tensorflow, PyTorch
- NumPy, SciPy, scikit-learn
- Apache Beam, Apache Airflow, Apache Spark
- GCP, AWS, CI/CD, Docker, LXC, Proxmox
- Tone.js, Three.js, Svelte, Vue.js, Firebase, Flask, Spring, PWA, Workbox, Hugo
- JUCE, Supercollider
- librosa, FMP Notebooks
- Logic Pro, Ableton Live, Reaper, Ardour
- COMSOL, REW
- gdb, OWASP ZAP, ghidra
- Figma

## EDUCATION

### Master's Degree in Music and Acoustic Engineering

DEIB, Politecnico di Milano (PoliMi) - Graduated Cum Laude

2021 - 2024

Milan, Italy

- Relevant Courses: Machine Learning, Computer Music, Sound Analysis Synthesis and Processing, Creative Programming and Computing, Musical Acoustics, Electronics and Electroacoustics, Computer Security
- Thesis: *Latent Space Regularization via Normalizing Attribute Transformations for Symbolic Music Generation*

### Bachelor's Degree in Information Engineering

DEI, University of Padua (UNIPD)

2019 - 2021

Padua, Italy

- Relevant Courses: Algorithms for Engineering, Systems and Models, Control systems, Electronics, Telecommunications
- Thesis: *Evaluation of the performance of commercial STT and NER services applied to digitized oral sources*

## PUBLICATIONS

**M. Pettenò**, A. I. Mezza and A. Bernardini, Latent Space Regularization..., *Forthcoming*, 2025

## WORK EXPERIENCE

### Full Stack Developer

ccelera s.r.l (Arsenalia Group) - Via Lepetit, 8, 20124

2021 - 2023

Milan, Italy

- Platforms: SAP Hybris Commerce
- Customers: Bonfiglioli, Cellularline, PegPerego, Metal Work

### DevOps Engineer

Walit s.r.l - Via Dandolo, 25/B, 31100

2020 - 2021

Treviso, Italy

- Platforms: Google Cloud Platform (GCP), Gitlab, Flask, OWASP ZAP

### Junior Software Architect

Alpenite Ltd - 38 Craven Street, WC2N 5NG

2019

London, UK

- Platforms: Mulesoft, RabbitMQ, FTP
- Customers: Stella McCartney

### Full Stack Developer

Alpenite s.r.l (Arsenalia Group) - Via delle Industrie, 27/7, 30175

2017 - 2018

Venice, Italy

- Platforms: SAP Hybris Commerce
- Customers: Kering Eyewear

## RESEARCH PROJECTS

### Latent Space Regularization via Normalizing Attribute Transformations for Symbolic Music Generation

Thesis in Music and Acoustic Engineering MS

2024

[github](#)

Keywords: symbolic music, attribute-controlled generation, data gaussianization

### Do Unconditional Deep Generative Models Spontaneously Learn How to Encode Human-Interpretable Musical Attributes?

Music and Acoustics Engineering Capstone course in MS.

2023

[github](#)

Keywords: variational autoencoders, latent space topological structure

### Evaluation of the performance of commercial STT and NER services applied to digitized oral sources

Thesis in Information Engineering BS

2021

[github](#)

Keywords: speech-to-text, named-entity-recognition, gcp, aws

## RESEARCH INTERESTS

- Deep Learning
- Representation Learning
- Music Information Retrieval
- Audio Generation
- AI-Assisted Music Composition
- Music Understanding

## LANGUAGES

**Italian:** Mother tongue

**English:** Fluent (C1)

**French:** Base (A1)

## MUSICAL BACKGROUND

As a self-taught multi instrumentalist, I have a well-rounded skill set across guitar, piano, and drums, while not being a virtuoso in any of them. My passion for synthesizers has always been a major influence, and listening across genres has enriched my understanding of music. I have experience playing in bands, which has further developed my collaborative skills. Additionally, I have a solid background in music theory, which I have developed independently over the years through my playing and further strengthened through courses in my master's degree.

## CREATIVE PROJECTS

<b>Ego</b>	2023
<i>Creative Programming &amp; Computing course in MS</i>	<a href="#">github</a>
<u>Keywords:</u> three.js, glsl, svelte, mediapipe, max4live, tone.js	
<b>Pulseq - Fractal Sequencer</b>	2022
<i>Advanced Coding Tools and Methodologies course in MS</i>	<a href="#">github</a>
<u>Keywords:</u> fractal sequencer, web app, svelte, tone.js, glsl	

## COMPUTER MUSIC PROJECTS

<b>Padder - Computer Music System</b>	2022
<i>Computer Music Languages and Systems course in MS</i>	<a href="#">github</a>
<u>Keywords:</u> arduino, touchosc, supercollider, processing	
<b>OranJam - JUCE</b>	2022
<i>Computer Music Languages and Systems course in MS</i>	<a href="#">github</a>
<u>Keywords:</u> juce, c++, cmake	
<b>HarMMMLonizer - Supercollider</b>	2022
<i>Computer Music Languages and Systems course in MS</i>	<a href="#">github</a>
<u>Keywords:</u> supercollider, harmonizer, delay lines, crosstalk delay feedback	
<b>Template Based Chord Recognition</b>	2021
<i>Computer Music Representations and Models course in MS</i>	<a href="#">github</a>
<u>Keywords:</u> MIR, chord recognition, librosa, libfmp	
<b>Rhythmic and Harmonic Analysis</b>	2021
<i>Computer Music Representations and Models course in MS</i>	<a href="#">report</a>
<u>Keywords:</u> music theory	

## SOUND ANALYSIS SYNTHESIS AND PROCESSING PROJECTS

<b>Wave Digital Filter Modeling</b>	2022
<i>Sound Synthesis and Spatial Processing course in MS</i>	<a href="#">report</a>
<u>Keywords:</u> wdf, matlab, virtual analog	
<b>Leslie Speaker Emulation</b>	2022
<i>Sound Synthesis and Spatial Processing course in MS</i>	<a href="#">report</a>
<u>Keywords:</u> leslie speaker, matlab, digital audio effect	
<b>Acoustic Source Localization with Microphone Array</b>	2022
<i>Digital Audio Analysis and Processing course in MS</i>	<a href="#">report</a>
<u>Keywords:</u> sound localization, doa estimation, matlab, microphone arrays	
<b>RIR Estimation with Wiener Filters</b>	2022
<i>Digital Audio Analysis and Processing course in MS</i>	<a href="#">report</a>
<u>Keywords:</u> room impulse response, wiener filter, matlab, convolution	

## MUSICAL ACOUSTICS PROJECTS

<b>Design of a Piano</b>	2023
<i>Musical Acoustics: Characterization of Musical Instruments course in MS</i>	<a href="#">report</a>
<u>Keywords:</u> applied acoustics, comsol, matlab, piano modeling	
<b>Helmholtz Resonator and System Impedance</b>	2022
<i>Musical Acoustics: Modeling of Musical Instruments course in MS</i>	<a href="#">report</a>
<u>Keywords:</u> applied acoustics, helmholtz resonator, matlab	