Matteo Pettenò

Venice, Italy

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 09/2021 - 10/2024
DEIB, Politecnico di Milano (PoliMi) - Graduated Cum Laude 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 09/2013 - 07/2021
DEI, University of Padua (UNIPD) 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*
- Note: Suspension of studies from 2016 to 2019.

Publications

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

Work Experience

Full Stack Developer 11/2021 - 08/2023
ccelera s.r.l (Arsenalia Group) - Via Lepetit, 8, 20124 Milan, Italy

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

DevOps Engineer 09/2019 - 02/2021
Walit s.r.l - Via Dandolo, 25/B, 31100 Treviso, Italy

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

System Integration Engineer 01/2019 - 07/2019
Alpenite Ltd - 38 Craven Street, WC2N 5NG London, UK

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

Full Stack Developer 01/2017 - 01/2019
Alpenite s.r.l (Arsenalia Group) - Via delle Industrie, 27/7, 30175 Venice, Italy

- Platforms: SAP Hybris Commerce
- Customers: Kering Eyewear

Research Projects

Latent Space Regularization via Normalizing Attribute Transformations for Symbolic Music Generation 2024
Thesis in Music and Acoustic Engineering MS github
Keywords: symbolic music, attribute-controlled generation, data gaussianization

Do Unconditional Deep Generative Models Spontaneously Learn How to Encode Human-Interpretable Musical Attributes? 2023
Music and Acoustics Engineering Capstone course in MS. github
Keywords: variational autoencoders, latent space topological structure

Evaluation of the performance of commercial STT and NER services applied to digitized oral sources 2021
Thesis in Information Engineering BS 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

Ego 2023
Creative Programming & Computing course in MS github
Keywords: three.js, glsl, svelte, mediapipe, max4live, tone.js

Pulseq - Fractal Sequencer 2022
Advanced Coding Tools and Methodologies course in MS github
Keywords: fractal sequencer, web app, svelte, tone.js, glsl

Computer Music Projects

Padder - Computer Music System 2022
Computer Music Languages and Systems course in MS github
Keywords: arduino, touchosc, supercollider, processing

OranJam - JUCE 2022
Computer Music Languages and Systems course in MS github
Keywords: juce, c++, cmake

HarMMMLonizer - Supercollider 2022
Computer Music Languages and Systems course in MS github
Keywords: supercollider, harmonizer, delay lines, crosstalk delay feedback

Template Based Chord Recognition 2021
Computer Music Representations and Models course in MS github
Keywords: MIR, chord recognition, librosa, libfmp

Rhythmic and Harmonic Analysis 2021
Computer Music Representations and Models course in MS report
Keywords: music theory

Sound Analysis Synthesis and Processing Projects

Wave Digital Filter Modeling 2022
Sound Synthesis and Spatial Processing course in MS report
Keywords: wdf, matlab, virtual analog

Leslie Speaker Emulation 2022
Sound Synthesis and Spatial Processing course in MS report
Keywords: leslie speaker, matlab, digital audio effect

Acoustic Source Localization with Microphone Array 2022
Digital Audio Analysis and Processing course in MS report
Keywords: sound localization, doa estimation, matlab, microphone arrays

RIR Estimation with Wiener Filters 2022
Digital Audio Analysis and Processing course in MS report
Keywords: room impulse response, wiener filter, matlab, convolution

Musical Acoustics Projects

Design of a Piano 2023
Musical Acoustics: Characterization of Musical Instruments course in MS report
Keywords: applied acoustics, comsol, matlab, piano modeling

Helmholtz Resonator and System Impedance 2022
Musical Acoustics: Modeling of Musical Instruments course in MS report
Keywords: applied acoustics, helmholtz resonator, matlab