Davide Lionetti

Audio software Engineer

CONTACT ME

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https://github.com/EllDy96

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SKILLS

Programming libraries/software

NumPy, Librosa, Scikit-learn, TensorFlow, Keras, Git, JUCE, Visual Studio, Ableton, MAX/MSP, Windows OS

Primary fields of study

Computer music, DSP, Music info retrival, AI & Deep learning, Sound Analysis/synthesis, Integrated electronic circuit, Computational Creativity

Languages

Italian

English

TOEIC: 890/990. September 2020.

PROGRAMMING

Python

HTML/CSS/Js

Java

C++

Supercollider

Matlab

Latex

ABOUT ME

Resilient, cheerful and passionate musician-engineer with the goal of merging his technical studies with his creative side. I love collaboration in developing innovative and cutting-edge audio applications, especially in the field of Human Computer Interaction.

Topics of interest: Music information retrieval, Deep Learning, Human-computer Interaction, Digital Musical Instrument design (see potfolio pg. 2).

EDUCATION

Master of Science

Politecnico di Milano, Italy — 2020 - 2023

Music and Acoustic Engineering

- Multimedia signal processing, sound analysis and synthesis, electronic&eletroacoustic, computer graphic, web development , music information retrieval, acoustic.
- Creative programming through AI and Deep Learning, computer music software design.

Grade: 107/110

Bachelor of Science

University of Padua, Italy — 2016 - 2019

Information Technologies Engineering

- Mathematic, physics, probability calculation and combinatorial analysis.
- Object-oriented programming, standard network protocols, software and relational database design, circuit theory and microelectronics, artificial intelligence.
- Programming languages Java, Python, SQL.

High school diploma

G. Marconi Institute, Sassari, italy — 2010 - 2015

Science-oriented high school

JOB EXPERIENCE

HCI - Engineer - Intern

LWT3, Milan, Italy — Nov - July 2022

https://github.com/EllDy96/Augmented-Guitar-Pedalboard

For my MSc final dissertation, I collaborated with LWT3 under the supervision of **Massimilani Zanoni.** Our project focused on the development of a ICT protocol to integrate LWT3's wearable sensors into the performing arts domain, resulting in a **smart musical instrument** that translates the user's muscle signals into sounds (follow the link for further detailes).
Main field: Human-Computer Interaction, Deep Learning, Wearable Devices, Digital Musical Instrument.

Barman and Commis waiter

Bill's Restaurant, Cambridge, Uk — 2019 - 2020

- Management skills: teamwork to guarantee the best experience for the customers.
- Mastery of the English language gained from continuous interaction with native speakers.

PORTFOLIO

Handmonizer: An Artist-Oriented Vocal Improvization Tool

Apr 2020 - Jul 2022

Music Interaction design
Hand gesture recognition
Human-computer interaction
Digital musical instrument
Supercollider, JS, ml5, MIDI, OSC.

Politecnico di Milano, Italy

https://github.com/EllDy96/Handmonizer

The Handmonizer is an artist-oriented **digital musical instrument**, tailored to the needs of the jazz singer *Maria Pia de Vito*; it is polyphonic harmonizer which changes its setting using hand motion recognition. The user can change the harmonic patterns by simply moving their hand in front of a webcam while singing. Full description and video in the link.
Advisors: Augusto Sarti, Mathew Yee-king, Mark D'inverno

3Dreams: an artistic VR Experience

Dec 2021 - Feb 2022

Music emotion recognition,
Creative programming
AI, Python, JS, MIR
Virtual Reality.
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Politecnico di Milano, Italy

https://github.com/EllDy96/3Dreams

3Dreams is a v**irtual reality web application** utilizing deep learning techniques to create an immersive environment that dynamically responds to the emotional contour of a user-selected musical track. It enhances the music listening experience by visually representing the emotions conveyed in the music through interactive shapes and colors.
Advisors: Massimiliano Zanoni, Luca Comanducci

The Handy fm synthesizer

May 2021 - Jun 2021

FM Sound Synthesis
Hand gesture recognition
Supercollider, Animation design
JS, P5.js, MIDI, OSC.

Politecnico di Milano, Italy

https://github.com/EllDy96/ComputerMusicProjects/tree/Homework3

Augmented musical instrument, which introduces a new interaction strategy, enabling real-time modulation of FM synthesis parameters through hand movements, using a deep neural network for hand movement recognition, allowing users to control the synthesizer intuitively. . Comprehensive documentation and a Video Demo available in the link.
Advisor: Fabio Antonacci

Synesthetic

Dec 2020 - Feb 2021

Web app , Rythmic analysis
Creative Programming
Beat tracking
Python, JS.

Politecnico di Milano, Italy

https://github.com/EllDy96/Synesthetic

Synesthetic is a **web application** that visually represents the real-time rhythmic structure of user-uploaded songs, inspired by Mondrian paintings. Users upload audio files with rhythmic recordings, such as drum beats. The application performs a rhythmic analysis, separating different periodicities present in the rhythm to create distinct visualizations. This dynamic interface serves as an informative tool for rhythm visualization.
Advisors: Franesco Bruschi, Vincenzo Rana.

Elaboration of a Lead Sheet Dataset for Computational Creativity Systems.

Aug 2019 - Sep 2019

Computational Creativity
Algorithmic composition
Markov chain, Python
Music21, MySQL.

Padua University, Italy

https://github.com/EllDy96/AlgorithmicComposer

Bachelor thesis explores a **computational creativity system** for automatic generation of monophonic melodies using a Markov chain. Initial music information retrieval involved analyzing over 1200 scores from the "Nottingham Dataset" (Irish popular music) with Python's Music21 library. The designed Markov chain emulates the human process of "combinatorial creativity" for melody generation..
Thesis supervisor: Antonio Rodà.
Co-supervisor: Filippo Carnovallini.