

Federico Simonetta

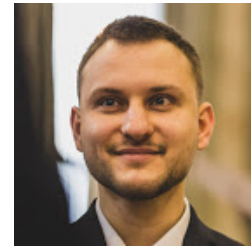
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Born: October 31, 1992 – Ponte dell'Olio (PC), Italy

Nationality: Italian



Last position

Ph.D. Candidate – 2018 - 2021

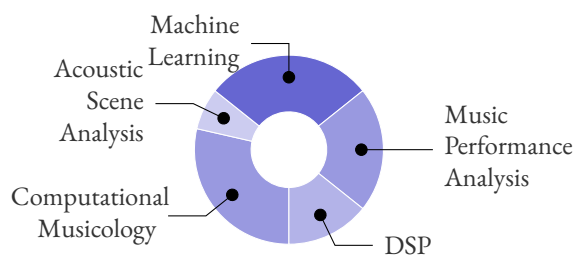
University of Milan, Computer Science Dept., LIM – Music Informatics Laboratory

End: January 7, 2022

Thesis: “MIA: Music Interpretation Analysis. A Multimodal Information Processing approach to Automatic Music Resynthesis.”

Abstract: This thesis discusses the development of technologies for the automatic resynthesis of music recordings using digital synthesizers. First, the main issue is identified in the understanding of how Music Information Processing (MIP) methods can take into consideration the influence of the acoustical context on the music performance. For this, a novel conceptual and mathematical framework named “Music Interpretation Analysis” (MIA) is presented. In the proposed framework, a distinction is made between the “performance” – the physical action of playing – and the “interpretation” – the action that the performer wishes to achieve. Second, the thesis describes further works aiming at the democratization of music production tools via automatic resynthesis: 1) it elaborates software and file formats for historical music archiving and multimodal machine-learning datasets; 2) it explores and extends MIP technologies; 3) it presents the mathematical foundations of the MIA framework and shows preliminary evaluations to demonstrate the effectiveness of the approach.

Research Interests



Scientific Output

| Source | Citations | h-index |
|---------------------------------------|-----------|---------|
| Google Scholar [link] | 64 | 4 |
| Scopus [link] | 31 | 2 |

The updated list of publications is available online:

<https://federicosimonetta.eu.org/publications>

Work Experience

RESEARCH

| | |
|-----------|---|
| 2018-2021 | Ph.D. Candidate, University of Milan |
| 2018 | Research Assistant, “Con Espressione” ERC project, OFAI - Austrian Research Institute for Artificial Intelligence, Vienna |

TEACHING

| | |
|-----------|---|
| 2020-2021 | Assistant for Advanced Multivariate Statistics (Python), University of Milan (Data Science) |
| 2020-2021 | Exam Assistant for various courses, University of Milan (Data Science) |
| 2020 | Assistant for Java Programming, University of Milan (Mathematics) |
| 2020 | Assistant for Mathematics Fundamentals, University of Milan (Economical Sciences) |
| 2020 | Teacher for Introduction to Audio Processing, Fondazione Luigi Clerici |
| 2018-2021 | Co-supervisor for Bachelor and Master Thesis, University of Milan |
| 2018 | Assistant for Computer Science Skills, University of Milan (Medicine) |
| 2016-2018 | Tutor for Java Programming, University of Padova (Information Engineering) |

Total hours spent in lectures: ~224

Total thesis supervised: 8 Bachelor (4 completed), 3 Masters (ongoing)

Scientific and Program Committees

REVIEWER

- “Information Sciences”, Elsevier (journal)
- “PLOS One” (journal)
- “International Society of Music Information Retrieval (ISMIR) Conference”: 2020, 2021
- “Sound and Music Computing Conference”: 2019, 2020, 2021, 2022
- “Computer-Supported Music Education (CSME)” – CSEDU: 2020, 2021, 2022
- “First International Workshop on Multilayer Music Representation and Processing (MMRP19)” (Indexed on IEEE Xplore): 2019

OTHER

- MMRP’19 Organizing Committee (Indexed on IEEE Xplore)
- **IEEE 1599 Working Group Member** (“IEEE Recommended Practice for Defining a Commonly Acceptable Musical Application Using XML”)

Languages

| | Understanding | | Speaking | | Writing |
|---------|---------------|---------|------------|-------------|---------|
| | Listening | Reading | Production | Interaction | |
| English | B2 | C2 | C1 | B2 | C1 |
| French | A1 | B1 | A2 | A2 | A1 |
| Italian | mother tongue | | | | |

Education

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|-----------|--|
| 2016-2018 | MS in Computer Engineering, University of Padova |
| 2015-2018 | Private Music Composition Lessons (Teachers: Fabio Crosera and Gianluca Baldi), Padova |
| 2015 | MA in Classical Guitar, Conservatory of Pavia |
| 2011-2014 | BS in Computer and Electronic Engineering, University of Pavia |

Coding Capabilities

Python



Julia, HTML5, Shell, Latex



C/C++, Java, Lua



R, SQL, PHP, Rust, Go



Main libraries used: PyTorch, Keras, Scikit-Learn, statsmodels, Scikit-Optimize, Pandas, Scipy, Essentia, Librosa, pyjulia (call Julia from python), Binder (C++ python bindings), Cython, Numba.

Software

All my research software are Open Source. Additional software projects are available as freely as speech: <https://federicosimonetta.eu/software>.

NOTABLE SOFTWARE

- **EWLD:** > 5000 leadsheets enriched with metadata;
- **ASMD:** python framework for compiling, using, and distributing music datasets;
- **PyCarla:** a Python module to synthesize MIDI events both online and off-line using audio plugins (VST, AU, LV2, SF2, SFZ, etc.);
- **MFP:** an HTML5 coding environment where sounds can be mapped to PC keyboard;
- **WikiCFP – GGS:** browser plugin to spot predatory conferences and journals on WikiCFP;
- **Predatory Battle:** finds predatory publications in a bibtex file;

Transversal skills

- My experience as musician and composer enhanced my **creativity**
- The difficulties encountered during the research projects improved my abilities to **think outside of the box**;
- In the research projects that I have joined since the Master Thesis, I have developed good **team working** abilities for preparing academic reports and publication, discussing issues, and taking collective decisions;
- I have participated to 6 international conferences and workshops, building strong **public relations** abilities;
- During my teaching experience I have learned to **promote** people skills, as well as to **flexibly** face any difficulty that people can find while learning;
- I have **organized** many music concerts and events and I have participated in the **organization** of an International Workshop (MMRP 2019);
- While being engaged in cultural associations, I have developed **communication** skills, especially for **Social Network management** and **communication campaigns**;