Andrea **Poltronieri**

RESEARCH ENGINEER IN MUSIC TECHNOLOGY

Music Technology Group, Barcelona, Spain

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Work Experience

Postdoctoral Researcher
UNIVERSITAT POMPEU FABRA - MUSIC TECHNOLOGY GROUP (MTG)

Barcelona, Spain
11/24 - present

- Conducting research on foundational models for music understanding integrating audio and symbolic representations.
- Teaching undergraduate and graduate courses, including *Statistics* and *Symbolic Music Analysis and Computational Musicology*, and supervising student research projects.

Computer Science Instructor
ALDINI VALERIANI FOUNDATION (FAV)

Bologna, Italy
04/24 - 08/24

- Designed and delivered a course on *Security of Systems and Infrastructures Based on Linux Technologies*, covering system administration, network security, and Bash scripting.

Teaching Assistant
UNIVERSITY OF BOLOGNA, DEPARTMENT OF MODERN LANGUAGES, LITERATURES, AND CULTURES (LILEC)

Bologna, Italy
09/21 - 10/24

- Delivered lectures and developed learning materials for the *Information Technology Skills* course, supporting students from non-technical backgrounds.

Research Assistant
UNIVERSITY OF BOLOGNA, DEPARTMENT OF MODERN LANGUAGES, LITERATURES, AND CULTURES (LILEC)

Bologna, Italy
05/21 - 10/21

- Contributed to the *ArCo4Science* project by developing semantic web solutions that enhanced interoperability between diverse symbolic music corpora.

Conversation Designer/Developer
HERES S.R.L.

Bologna, Italy
01/20 - 04/21

- Contributed to the development of enterprise-level conversational AI systems, including NLP components and language model fine-tuning.
- Supported client integration and participated in internal research on chatbot interaction and dialogue strategies.

Musician - Guitarist
DEGO ORCHESTRA

Padua, Italy
09/14 - 03/20

- Performed as guitarist in an orchestra specializing in folk contemporary music, contributing to arrangements, studio recordings and public performances.

Education

Ph.D. Student in Computer Science and Engineering
ALMA MATER STUDIORUM - UNIVERSITY OF BOLOGNA

Bologna, Italy
11/21 - 04/25

- Ph.D. funded by the Polifonia Project (H2020) focusing on music data integration, large scale datasets construction, and symbolic representation learning.
- *Dissertation:* Harmonising Music Information Retrieval with Semantics: from Data Integration to Multimodality
- *Supervisor:* Valentina Presutti
- *Courses*: Machine Learning and Constrained Optimization, Engineering Intelligent Collective Systems, Deep Natural Language Processing, Data Visualization for Scientists, Deep Learning Frameworks, Introduction to Reinforcement Learning, Advanced Reinforcement Learning, Towards Developmental Machine Learning

Visiting Researcher
UNIVERSITAT POMPEU FABRA - MUSIC TECHNOLOGY GROUP (MTG)

Barcelona, Spain
08/23 - 02/24

- Visiting period at the Music Technology Group focusing on multimodal harmonic analysis. Key achievements during this period include the development of a chord recognition system and an audio-to-chord alignment model.
- *Supervisor:* Martín Rocamora

Master's degree in Digital Humanities and Digital Knowledge

Bologna, Italy
ALMA MATER STUDIORUM – UNIVERSITY OF BOLOGNA
10/18 - 03/21

- *Grade:* 110/110 with honour
- *Thesis:* Using Semantic Technologies to support Music Representation Interoperability and Musicological Analysis
- *Supervisor:* Aldo Gangemi; *Co-supervisor:* Albert Meroño Peñuela
- *Courses*: Computational Thinking and Programming, Data Modelling and Multimedia Databases, Information Modelling and Web Technologies, Usability and User Experience, Intangible Artifacts Cultural Heritage and Multimedia, Machine Learning, Knowledge Representation and Extraction, Knowledge Organization and Digital Methods in the Cultural Heritage Domain

Exchange Student – Erasmus+ Program

Lisbon, Portugal
UNIVERSIDADE NOVA DE LISBOA
09/17 - 02/18

- *Courses*: Music and Computing, Philosophy of Music: Foundations, Ethnomusicology: Introduction, Theory and Methods of Ethnomusicology, Theory and Methods in Musicology

Bachelor's degree in DAMS – Drama, Art and Music Studies

Bologna, Italy
ALMA MATER STUDIORUM – UNIVERSITY OF BOLOGNA
09/15 - 11/18

- *Thesis:* The "Gobatti case", an example of "fanatism" in late 19th century Italian opera houses
- *Supervisor:* Anna Scalfaro
- *Courses*: Elements of Harmony and Counterpoint, History of Music II: Seventeenth-Eighteenth Centuries, History of Music III: Nineteenth Century, History of Music IV: Twentieth Century, History of Popular Music, Philosophy and Musical Aesthetics

Personal Skills

Italian	Native speaker
English	C1 level (7.0 IELTS Academic Overall Band Score - test date 18/07/2019)
Portuguese	B1 level (Common European Framework of Reference for Languages)
Spanish	B1 level (Common European Framework of Reference for Languages)

Technical Skills

Programming	Python, C++, JavaScript, TypeScript, Java, Julia
ML Libraries	PyTorch, PyTorch Lightning, TensorFlow, Scikit-learn
Web Design	Django, NodeJS, Next, React, Tailwind CSS
Data Engineering	RDF, OWL, SQL, SPARQL, Protégé

Honors & Awards

11/2023	**Best Resource Paper Nominee** - International Semantic Web Conference - ISWC2023	*Athens, Greece*
05/2023	**Best Research Paper Award** - European Semantic Web Conference - ESWC2023	*Hersonissos, Greece*
07/2022	**Best Poster Award** - International Semantic Web School - ISWS2022	*Bertinoro, Italy*

Selected Publications

Alonso-Jiménez, Pablo, Pedro Ramoneda, R. Oguz Araz, **Andrea Poltronieri**, and Dmitry Bogdanov. "OMAR-RQ: Open Music Audio Representation Model Trained with Multi-Feature Masked Token Prediction". In: *Proceedings of the 32nd ACM International Conference on Multimedia, MM 2024, Dublin, Ireland*. ACM, 2025.

de Berardinis, Jacopo, Valentina Anita Carriero, Nitisha Jain, Nicolas Lazzari, Albert Merono Penuela, **Poltronieri, Andrea**[1], and Valentina Presutti. "The Polifonia Ontology Network: Building a Semantic Backbone for Musical Heritage". In: *Proceedings of the 22nd International Semantic Web Conference*. 2023.

de Berardinis, Jacopo, Albert Meroño-Peñuela, **Poltronieri, Andrea**[1], and Valentina Presutti. "ChoCo: a Chord Corpus and a Data Transformation Workflow for Musical Harmony Knowledge Graphs". In: 2023.

de Berardinis, Jacopo, Albert Meroño-Peñuela, **Poltronieri, Andrea**[1], and Valentina Presutti. "The Harmonic Memory: a Knowledge Graph of harmonic patterns as a trustworthy framework for computational creativity". In: *Proceedings of the ACM Web Conference 2023*. 2023, pp. 3873–3882.

Poltronieri, Andrea, Valentina Presutti, and Martín Rocamora. "ChordSync: Conformer-Based Alignment of Chord Annotations to Music Audio". In: *Sound and Music Computing Conference (SMC2024)*. 2024.

Poltronieri, Andrea, Xavier Serra, and Martín Rocamora. "From Discord to Harmony: Decomposed Consonance Based Training for Improved Audio Chord Estimation". In: *Proceedings of the the 26th International Society for Music Information Retrieval Conference ISMIR 2025*. 2025.

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[1] Alphabetical order.