

Andrea Poltronieri

RESEARCH ENGINEER IN MUSIC TECHNOLOGY

Music Technology Group, Barcelona, Spain

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Work Experience

Research Engineer

UNIVERSITAT POMPEU FABRA - MUSIC TECHNOLOGY GROUP (MTG)

Barcelona, Spain

11/24 - present

- Research engineer in the field of Music Information Retrieval, focusing on the development of foundational models for music understanding.
- Supervisor: [Martín Rocamora](#)

Computer Science Instructor

ALDINI VALERIANI FOUNDATION - FAV

Bologna, Italy

04/24 - 08/24

- Lecturer of the course “Security of systems and infrastructures based on LINUX technologies” at the Aldini Valeriani Foundation, with a focus on Linux administration and Bash programming.

Teaching Assistant

UNIVERSITY OF BOLOGNA, DEPARTMENT OF MODERN LANGUAGES, LITERATURES, AND CULTURES - LILEC

Bologna, Italy

09/21 - 10/24

- Teaching Assistant for the course *Information Technology Skills* at the Department of Modern Languages, Literatures, and Cultures. Responsibilities included preparing teaching materials, conducting lectures, and assisting with examination sessions.

Assistant Researcher

UNIVERSITY OF BOLOGNA, DEPARTMENT OF MODERN LANGUAGES, LITERATURES, AND CULTURES - LILEC

Bologna, Italy

05/21 - 10/21

- As a Research Assistant for the *ArCo4Science* project, I contributed to research focused on enhancing interoperability among symbolic music corpora, originally annotated in different formats and syntaxes.

Conversation Designer/Developer

HERES S.R.L.

Bologna, Italy

01/20 - 04/21

- Led the design and implementation of conversational flows and NLP algorithms within an enterprise-level chatbot development company. Responsibilities included project management, customer relations, and active involvement in research and product development, with a focus on fine-tuning language models for enhanced performance.

Musician - Guitarist

DEGO ORCHESTRA

Padua, Italy

09/14 - 03/20

Education

Ph.D. Student in Computer Science and Engineering

ALMA MATER STUDIORUM - UNIVERSITY OF BOLOGNA

Bologna, Italy

11/21 - 03/25

- Ph.D. funded by the [Polifonia Project](#) (H2020) focusing on exploring multimodal harmonic similarity in music. This research involves analyzing audio-based similarity informed by symbolic music annotations, leveraging Representation Learning and Neuro-symbolic methods.
- 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 audio-based harmonic analysis informed by symbolic music data. 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 – International Degree

ALMA MATER STUDIORUM – UNIVERSITY OF BOLOGNA

Bologna, Italy

10/18 - 03/21

- *Grade:* 110/110 with honour
- *Dissertation:* 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

UNIVERSIDADE NOVA DE LISBOA

Lisbon, Portugal

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

ALMA MATER STUDIORUM – UNIVERSITY OF BOLOGNA

Bologna, Italy

09/15 - 11/18

- *Dissertation:* 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 (Common European Framework of Reference for Languages) 7.0 IELTS Academic Overall Band Score (test date 18/07/2019)
Portuguese	B1 level (Common European Framework of Reference for Languages)
Spanish	A2 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 - Extended Semantic Web Conference - ESWC2023	Hersonissos, Greece
07/2022	Best Poster Award - International Semantic Web School - ISWS2022	Bertinoro, Italy

Published Articles

- Carriero, Valentina Anita, Fiorela Ciroku, Jacopo de Berardinis, Delfina Sol Martinez Pandiani, Albert Meroño-Peñuela, **Andrea Poltronieri**¹, and Valentina Presutti. "Semantic Integration of MIR Datasets with the Polifonia Ontology Network". In: *ISMIR Late Breaking Demo*. Nov. 2021. URL: <https://archives.ismir.net/ismir2021/latebreaking/000020.pdf>.
- de Berardinis, Jacopo, Valentina Anita Carriero, Nitisha Jain, Nicolas Lazzari, Albert Meroño-Peñuela, **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. URL: https://link.springer.com/chapter/10.1007/978-3-031-47243-5_17.
- de Berardinis, Jacopo, Valentina Anita Carriero, Albert Meroño-Peñuela, **Poltronieri, Andrea**¹, and Valentina Presutti. "The Music Meta Ontology: a flexible semantic model for the interoperability of music metadata". In: *Proceedings of the the 24th International Society for Music Information Retrieval Conference*. 2023. URL: <https://arxiv.org/pdf/2311.03942>.
- 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. URL: <https://www.nature.com/articles/s41597-023-02410-w>.
- 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. URL: <https://dl.acm.org/doi/pdf/10.1145/3543507.3587428>.
- de Berardinis, Jacopo, Albert Meroño-Peñuela, **Poltronieri, Andrea**¹, and Valentina Presutti. "The Music Annotation Pattern". In: *Proceedings of the 13th Workshop on Ontology Design and Patterns (WOP 2023)*. Ed. by Vojtěch Svátek, Valentina Anita Carriero, María Poveda, Christian Kindermann, and Lu Zhou. 2022. URL: https://www.albertmeronyo.org/wp-content/uploads/2022/11/WOP2022_paper_3461.pdf.
- Fathallah, Nadeen, Arunav Das, Stefano De Giorgis, **Poltronieri, Andrea**, Peter Haase, and Liubov Kovriguina. "NeOn-GPT: Empowering NeOn Methodology with Large-Language Models". In: *European Semantic Web Conference (ESWC)*. 2024. URL: <https://2024.eswc-conferences.org/wp-content/uploads/2024/05/77770034.pdf>.
- Lazzari, Nicolas, **Poltronieri, Andrea**¹, and Valentina Presutti. "Classifying sequences by combining context-free grammars and OWL ontologies". In: *European Semantic Web Conference (ESWC)*. 2023.
- Lazzari, Nicolas, **Poltronieri, Andrea**¹, and Valentina Presutti. "Pitchclass2vec: Symbolic Music Structure Segmentation with Chord Embeddings". In: *Proceedings of the 1st Workshop on Artificial Intelligence and Creativity*. Ed. by Allegra De Filippo, Michela Milano, Valentina Presutti, and Alessandro Saffiotti. Nov. 2022. URL: <https://ceur-ws.org/Vol-3278/paper2.pdf>.
- Poltronieri, Andrea**. "Knowledge-based Multimodal Music Similarity". In: *European Semantic Web Conference (ESWC)*. 2023. URL: https://2023.eswc-conferences.org/wp-content/uploads/2023/05/paper_Poltronieri_2023_Knowledge-based.pdf.
- Poltronieri, Andrea** and Aldo Gangemi. "The HaMSE Ontology: Using Semantic Technologies to support Music Representation Interoperability and Musicological Analysis". In: *Proceedings of the 1st Workshop on Multisensory Data and Knowledge (MDK 2021), Zaragoza, Spain, September 1, 2021*. 2021. URL: <http://ceur-ws.org/Vol-3064/mdk5.pdf>.
- Poltronieri, Andrea** and Aldo Gangemi. "The Music Note Ontology". In: *Proceedings of the 12th Workshop on Ontology Design and Patterns (WOP 2021), Online, October 24, 2021*. Ed. by Karl Hammar, Cogan Shimizu, Hande Küçük McGinty, Luigi Asprino, and Valentina Anita Carriero. Nov. 2021. URL: <http://ceur-ws.org/Vol-3011/pattern2.pdf>.
- 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.

¹Alphabetical order.