

# Ilaria Manco

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## Statement

I am a final-year PhD student in AI and Music, working on multimodal learning for music understanding. My research focuses on developing audio-and-language models for self-supervised representation learning with applications to the music domain. I am also interested in multimodal learning for foundation models and creative AI applications.

## Education

**Queen Mary University of London** Sep 2019 – present

*PhD, Artificial Intelligence & Music*

Research Topic: Bridging audio and language for music understanding via multimodal deep learning

**Imperial College London** Oct 2014 – Jun 2018

*MSci, Physics*

Selected modules: Computational Physics, Statistical Mechanics, Complexity & Networks, Quantum Information, Computational Neuroscience, Information Theory, Advanced Machine Learning

## Experience

**Google DeepMind** – London, UK Nov 2023 - Feb 2024

*Student Researcher*

Research on music representation learning. Hosts: Antoine Caillon and Ethan Manilow (Magenta).

**Adobe** – San Francisco, US Jul 2023 - Oct 2023

*Research Scientist / Engineer Intern*

Researched data- and parameter-efficient techniques for music-text contrastive learning (work under review). Advisors: Oriol Nieto and Justin Salamon (Audio Research Group).

**Sony** – Tokyo, Japan Jul – Oct 2022

*Research Scientist Intern*

Designed, developed and evaluated a model for generating musical accompaniments via discrete diffusion conditioned on audio and lyrics. Advisors: Marco Martínez and Wei-Hsiang Liao (AI & Music Technology Group).

**Quantexa** – London, UK Oct 2018 – Sep 2019

*Data Scientist*

Designed and built data models for network analytics with applications to fraud detection, risk scoring and transaction monitoring. Implemented data pipelines for distributed data processing.

**Iris.ai** – Berlin, Germany Jul – Aug 2018

*Research Intern*

Developed a novel word sense disambiguation model to improve the natural language understanding pipeline used in production.

## Selected Publications

**Manco, I.**, Weck, B. et al. *The Song Describer Dataset: a Corpus of Audio Captions for Music-and-Language Evaluation*. Machine Learning for Audio Workshop at NeurIPS, 2023

**Manco, I.**, Benetos, E., Quinton, E., & Fazekas, G. *Contrastive Audio-Language Learning for Music*. 23rd International Society for Music Information Retrieval Conference (ISMIR), 2022

**Manco, I.**, Weck B., Tovstogan P., Won M. & Bogdanov D. *Song Describer: a Platform for Collecting Textual Descriptions of Music Recordings*. ISMIR Late-breaking/Demo, 2022

**Manco, I.**, Benetos, E., Quinton, E., & Fazekas, G. *Learning Music Audio Representations via Weak Language Supervision*. International Conference on Acoustics, Speech, & Signal Processing (ICASSP), 2022

**Manco, I.**, Benetos, E., Quinton, E., & Fazekas, G. *MusCaps: Generating Captions for Music Audio*. International Joint Conference on Neural Networks (IJCNN), 2021

Projects	<i>Word2Wave: a Framework for Text-to-Audio Generation</i>	2021
	A simple method for text-controlled audio generation with WaveGAN and audio-text embeddings	
	<i>Spatial Scaling in Human Mobility Models (Master's Thesis)</i>	2018
	Study of spatial interactions via modelling and analysis of human flows using simulation and data-based approaches. Includes a framework for hierarchical clustering of spatial data	
Languages & Skills	<b>Italian</b> (native), <b>English</b> (fluent), Spanish (conversational)	
	<b>Python</b> (PyTorch, NumPy, SciPy, pandas, Matplotlib, librosa), Git, AWS, Scala (prior experience)	
Awards & Scholarships	<b>Enrichment Scheme, The Alan Turing Institute</b>	2021
	Offered a place on the programme and awarded a stipend top-up	
	<b>DLRL Summer School, CIFAR and Mila</b>	2020
	Selected to attend the Deep Learning Reinforcement Learning Summer School	
	<b>Travel Grant, Women in Machine Learning (WiML)</b>	2020
	Received funding from WiML to attend ICML 2020	
	<b>PhD Studentship, UK Research and Innovation (UKRI)</b>	2019
	Awarded a full studentship for a 4-year PhD at the CDT in Artificial Intelligence and Music	
	<b>Best Research Proposal, Imperial College London</b>	2018
	Awarded the 1 <sup>st</sup> prize for a team project on Quantum Key Distribution	
Invited Talks	<b>Universal Music Group</b>   “Music & Language Models”	
	<b>Sony R&amp;D</b>   “Contrastive Audio-Language Learning for Music”	
	<b>Singapore University of Technology &amp; Design</b>   “Bridging Audio and Language to Improve Automatic Music Understanding”	
	<b>Neural Audio Synthesis Workshop</b>   “Text-guided Audio Generation with Word2Wave”	
	<b>Intelligent Sensing Winter School</b>   “Learning Music Audio Representations via Weak Language Supervision”	
Activities & Service	<b>Co-organiser</b>   3rd Workshop on NLP for Music and Audio (NLP4MusA)	2024
	<b>Sponsorship Co-chair</b>   ISMIR 2023	2023
	<b>Program Co-chair</b>   2nd Workshop on Human-Centric Music Information Research	2023
	<b>Co-organiser</b>   Italian Music Tech Meetup	2022-2023
	<b>Reviewer</b>   ICASSP, TASLP, ISMIR, WASPAA, EURASIP, ICLR (workshop)	2021-2024
	<b>Master's Project Co-supervisor</b>   Multimodal Zero-Shot Learning for Music	2022
	<b>Volunteer</b>   Women in Machine Learning Workshop (NeurIPS)	2020
	<b>Teaching Assistant</b>   Postgraduate Machine Learning module (ECS708P)	2020
	<b>Co-organiser</b>   Digital Music Research Network (DMRN)	2020
	<b>Seminar Organiser</b>   Centre for Digital Music (C4DM) at QMUL	2019-2023