

# Emilio Molina

## CONTACT

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## COURSES & OTHERS

Deep Learning Nanodegree Foundation (Udacity, 2018)

Professional Degree of Classical Piano (Conservatori del Liceu, Barcelona, 2011)

## TECHS

Unix • Git • Docker • AWS • GCP • MySQL • MongoDB • Jenkins • Bash • Python • Django • Flask • FastAPI • uWSGI • Pandas • Numpy • Keras • TensorFlow • Scikit-learn • Jupyter • Matplotlib • Bokeh • Librosa • Es-sentia • OpenCV • Pytest • Unittest • Flake8 • C++ • Boost • FFTW3 • TensorFlow C++ API • pybind11 • VTune • CppLint • HTML • Bootstrap • CSS • Javascript • jQuery • Java • Lucene • Tomcat

## LANGUAGES

**Spanish:** mother tongue

**English:** Certificate in Advanced English (CAE) (University of Cambridge, July 2013)

**French:** DELF B2 French Certificate (May 2010) (Université de Lille)

## EXPERIENCE

### BMAT | RESEARCH ENGINEER

Jan 2015 - Present | Barcelona / Remote

- Leading role in a research & development team of 6 members.
- Research and development on new audio fingerprinting approaches for background music (+20% id-rate), and for pitch-shifted music. In production.
- Porting of legacy Java matching algorithm to C++11 / Python bindings / HTTP API in Flask. Runtime optimization (4x gain) in collaboration of HPC research team from UAB. In production.
- Development of system for record linkage and entity resolution of noisy music metadata from multiple sources. Implemented in Python with HTTP API (FastAPI). In production.
- Research and development of music detection system using machine learning. Develop web annotation tool in Django, prepared training dataset, and manage annotation of it with external freelancers. Best algorithm in MIREX 2018. Implemented in C++11 with TensorFlow C++ API. In production.
- Technical management of several publicly-funded research projects
- Prepared multiple demos and PoCs of new tech ideas for potential customers

### UNIVERSITAT POMPEU FABRA | ASSISTANT PROFESSOR

October 2020 - December 2021 | Barcelona / Remote

- Part-time assistant professor for subject "Audio and Video Encoding Systems"

### UNIVERSIDAD DE MÁLAGA | RESEARCH STAFF

January 2012 - January 2015 | Málaga

- Research and development (mostly in Matlab) of algorithms on music information retrieval and audio processing
- Publication of multiple journal and conference papers, leading to a PhD thesis. List in <https://emilio-molina.github.io/publications>

## EDUCATION

### PHD, MUSIC INFORMATION RETRIEVAL

2012 - 2017 | Universidad de Málaga

- E.Molina, "Singing Information Processing: Techniques and Applications", PhD Thesis. University of Málaga, 2017.

### MASTER'S DEGREE, SOUND AND MUSIC COMPUTING

2010 - 2012 | Universitat Pompeu Fabra, Barcelona

- Audio signal analysis and processing. Machine learning. Time series analysis. Music Production.

### TELECOMMUNICATION ENGINEERING

2007 - 2012 | Universidad de Málaga

- Dissertation "Software tool for the correction of dissonances in polyphonic music", awarded the Finalist Ericsson National Prize on Applications for Multimedia Environments in May 2013
- Erasmus studentship at Polytech Lille (France) (Sept. 2009 - June 2011).

### TECHNICAL DEGREE IN TELECOMMUNICATIONS, SOUND AND IMAGE

2003 - 2007 | Universidad de Málaga

- Dissertation "Multitrack environment for audio recording in C#", awarded the Best Project in Technical Telecommunication Engineering at University of Málaga
- Award for Best Academic Record