

# Eduardo Fonseca

PhD Candidate

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My thesis focuses on audio dataset creation and deep learning for sound event recognition. My research interests include machine learning and signal processing with applications to machine listening, as well as sound and music computing and acoustics.

## PhD status

Oct 2016 – present **Music Technology Group, Universitat Pompeu Fabra, Barcelona.**  
I am in my last year of PhD, under the supervision of [Dr. Xavier Serra](#). My most recent contributions include two papers about learning sound event classifiers in presence of label noise, and co-organizing a [Kaggle audio tagging competition](#). My thesis is partially funded by two Google Faculty Research Awards (2017 & 2018) for the creation and exploitation of the [FSD](#) dataset. Expected thesis submission date is winter of 2021.

## Work Experience

Sept – Dec 2019 **Research Internship, SOUND UNDERSTANDING, GOOGLE AI PERCEPTION, NYC.**  
Evaluation of the impact of label noise when training sound event recognizers using very large amounts of weakly labeled data.

April 2016 – Feb 2019 **AudioCommons project, MUSIC TECHNOLOGY GROUP, UNIVERSITAT POMPEU FABRA, BARCELONA.**  
Creation of the [Freesound Datasets](#) platform used to build and maintain several open audio [datasets](#). Development of deep learning approaches for acoustic scene and sound event classification.

Sept 2014 – March 2016 **PHONEDRIVE project, TELEFÓNICA R&D & TECHNICAL UNIVERSITY OF MADRID.**  
Design of a system for driving pattern recognition by means of signals of smartphone sensors (accelerometers and gyroscopes).

June 2015 **Forensic Acoustics, SPANISH NATIONAL RESEARCH COUNCIL (CSIC).**  
Analysis of speech recordings carried out in CSIC's Phonetics Laboratory with forensic acoustic purposes.

Oct 2010 – Dec 2013 **HECCO project, INECO & TECHNICAL UNIVERSITY OF MADRID.**  
Machine learning and signal processing for objective speech quality assessment in air-ground communications.

July 2006 **Sound Technician Internship, RADIOTELEVISIÓN ESPAÑOLA.**  
Audio production of news bulletin and basic tv programmes.

## Recent publications (full list available at [google scholar](#))

- [1] Eduardo Fonseca, Frederic Font, and Xavier Serra. Model-agnostic approaches to handling noisy labels when training sound event classifiers. In *Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, 2019.
- [2] Eduardo Fonseca, Manoj Plakal, Daniel P. W. Ellis, Frederic Font, Xavier Favory, and Xavier Serra. Learning sound event classifiers from web audio with noisy labels. International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2019.

## Awards

2017 & 2018 **Google Faculty Research Award.**  
Project proposals developed under the supervision of Dr. Xavier Serra focused on *i)* the creation of [FSD](#), a large-scale open dataset for sound event recognition based on [Freesound](#) content organized with the [AudioSet Ontology](#), and *ii)* its exploitation for machine learning competitions to foster sound event recognition research.

## Co Curricular

2018 & 2019 **Detection and Classification of Acoustic Scenes and Events (DCASE) 2018 & 2019 Task2 Organizer,**  
Co-organization of the competitions [Audio tagging with noisy labels and minimal supervision](#) and [General-purpose audio tagging of Freesound content with AudioSet labels](#), run on [Kaggle](#) with up to 880 teams.

2017 **Sónar Innovation Challenge Mentor,**  
Co-mentoring a team in the development of a [tool](#) for 3D exploration of Freesound based on sound similarity.

## Computer & Technical Skills

Languages *High:* Python, MATLAB, Keras | *Basic:* Tensorflow, Torch, Lua, HTML, C/C++, Apache Beam  
Software Linux, MAC OSX, Windows, L<sup>A</sup>T<sub>E</sub>X, office-related software, WaveSurfer, Audacity, Sonic Visualizer  
Acoustics *Simulation:* CATT Acoustics, EASE | *Measurement:* MLSSA, 01 dB Symphonie, Brüel & Kjær PULSE