Miquel Angel India
AI|ML Engineer, PhD

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Work Experience

2023-2024   **Senior Speech Researcher**. *VÓCALI S.L.*
- Finding/implementing solutions for Automatic Speech Recognition (**ASR**).
- Developing tools for model analysis in kaldi-based acoustic and language models (**LMs**).
- *Stack: Python, Bash, C++, Kaldi.*

2020-2023   **Principal Scientist**. *Encert Predict S.L.*
- Leading and mentoring a team of 5 data scientists and software engineers, while also contributing as *individual contributor*.
- Designing Deep Learning (**DL**) and Reinforcement Learning (**RL**) models trained to create market signals or to optimize **FOREX** portfolios.
- Implemented an **E2E** platform to invest in the **FOREX** market using signals created by AI models.
- *Stack: Python, Pytorch, SQL, Bash, MLFlow, Grafana, IB.*

2018-2021   **ML/AI Engineer**. *Verbio Technologies S.L.*
- Implemented an AI based platform to train **E2E ASR** models.
- Implemented a web-socket based solution for an online/offline **ASR** system.
- Trained **ASR** models for different clients and languages: English, Spanish and Japanese.
- Mentoring to the **ASR** team in **DL** and state-of-the-art (SOTA) systems.
- Leading a team of 2 data scientists in the development of speech multi-task models for a European project.
- Contributed to the design, the implementation and the training of **language identification** systems based on **DL** models.
- Contributed to the design, the implementation and the training of speaker verification **SV** systems based on **DL** models.
- Contributed to the design, the implementation and the training of **speaker diarization** systems based on **ML/DL** models for the call transcription task.
- *Stack: Python, Numpy, Pytorch, Tensorflow, C++, Bash, Kaldi, ESPNet.*

2017-2022 **Research Assistant**. *TALP Research Center*
- Designed and implemented **speaker diarization** models for the **call transcription** task.
- Explored the combination of acoustic and lexical information for **speaker diarization** systems.
- Designed and implemented a **DL** based system for fraudulent trademark registrations detection.
- Designed a **DL** topology for the **speaker verification** task from scratch.
- Explored attention models for the pooling block of a speaker embedding extractor **DL** model.
- *Stack: Python, C++, Bash, Numpy, Pytorch, Tensorflow, Keras.*

2017 **Research Intern**. *Caixabank S.L.*
- Implemented and evaluated different **DL** based topologies for the Named Entity Recognition (**NER**) task for Automatic Dialog systems.
- *Stack: Python, Tensorflow, Keras.*

2015-2016 **Research Assistant**. *TALP Research Center*
- Designing and implementing **Speaker Recognition** and **Multimodal Person Identification** systems.
- *Stack: Python, Tensorflow, C++, Bash.*

Computer science skills

Languages	Python, C/C++, Shell/Bash
Web	Node.js, HTML, CSS, JavaScript
DevOps	Docker, Gitlab/Github, CI/CD, MLFlow, Grafana
Frameworks	Pytorch, Tensorflow/Keras, numpy/scipy, asyncio, SQL

Professional skills

- **Deep Learning**. Theoretical knowledge on neural network architectures. Practical experience with Keras/Tensorflow/Pytorch.
- **Speech Processing**. Advanced knowledge in Speaker Verification/Identification/Diarization tasks. Practical experience with Speech Recognition and basic knowledge on Speech Synthesis.
- **Natural Language Processing**. Intermediate knowledge on Natural Language algorithms, more specifically in Automatic Dialog systems.
- **Research Projects Management**. Small teams (<6 persons) management experience using AGILE methodologies.
- **Technical Projects Research/Deployment**. Experience coding with python following CI/CD, clean-coding and TDD protocols and methodologies.

Educational/Research Background

2016-2022	**Doctor of Philosophy (PhD)**, *Universitat Politècnica de Catalunya*, Deep Learning Methods for Speaker Verification and Diarization.
2015-2016	**Master of Business Administration (MBA)**, *Universitat Politècnica de Catalunya, Final grade − 8.*
2007-2015	**Master of Engineering (M.Eng.), Telecommunications Engineering**, *Universitat Politècnica de Catalunya, Final grade − 6,8.*

Languages

Catalan	Native language
Spanish	Native language
English	Intermediate (C1)

Last Publications

2023	**Self Attention Networks in Speaker Recognition**, *Applied Sciences, Journal published by MPDI.*
2023	**Language Modelling for Speaker Diarization in Telephonic Interviews**, *Computer Speech & Language 78, 101441.*
2022	**Speaker Characterization by means of Attention Pooling**, *Iberspeech 2022 Granada, Spain.*
2021	**Double multi-head attention for speaker verification**, *ICASSP 2021 Toronto, Canada.*
2020	**Self-Attention Encoding and Pooling for Speaker Verification**, *Interspeech 2020, Shangai, Xina.*
2020	**I-Vector Transformation Using K-Nearest Neighbors for Speaker Verification**, *ICASSP 2020, Barcelona, Spain.*
2019	**Self Multi-Head Attention for Speaker Recognition**, *Interspeech 2019, Graz, Austria.*
2019	**Auto-Encoding Nearest Neighbor i-vectors for Speaker Verification**, *Interspeech 2019, Graz, Austria.*
2018	**UPC Multimodal Speaker Diarization System for the 2018 Albayzin Challenge**, *Iberspeech 2018, Barcelona, Spain.*
2017	**LSTM Neural Network-based Speaker Segmentation using Acoustic and Language Modelling**, *Interspeech 2017, Stockholm, Sweden.*

Honors and Awards

2022	PhD qualified with Cum Laude: Deep Learning Methods for Speaker Verification and Diarization.
2015	Master thesis qualified with highest honors: UPC System for the 2015 MediaEval Multimodal Person Discovery in Broadcast TV task.