Leonardo Boulitreau

AI Audio Researcher

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About

I am a researcher in the intersection of artificial intelligence and audio, with over 4 years of experience and a solid background in signal processing. Currently, I work as an AI Speech Researcher **@CPqD**. My research efforts are directed towards developing human-machine interaction systems that are more affective and human-empowering.

Skills

Deep Learning	PyTorch, Tensorflow, HuggingFace, ONNX, Gradio, MLFlow
Speech Frameworks	Coqui, SpeechBrain, Amphion, ESPNET, NeMo, Kaldi
Tools	Docker, Git, Kubernetes
Cloud	AWS, GCP
Programming	Python, C, C++, MATLAB, LaTeX
Languages	Portuguese, English, French
Competences	Paper Implementation, Experiment Design, Team Collaboration

Experience

AI+Speech Researcher

São Paulo, Brazil

@CPqD - Research and Development Center in Telecommunications

2023 - Present

- Currently evaluating synthetic LLM textual data for ASR domain-specific improvement.
- Evaluated and improved fairness on multi-accented speech recognition for the Brazilian Portuguese language.
- Improved the company's emotion recognition system in production, in terms of speed and performance, by developing a 2-step emotion recognition architecture (ECAPA-TDNN + HuBERT Emotion Classifier)
- Enriched the company's call center customer profiling product by developing and sending to production speech age and gender classifier models.

Fellow Master

São Paulo, Brazil

@CPqD - Research and Development Center in Telecommunications

2021 - 2023

- Developed neural customer-oriented expressive text-to-speech models for the Brazilian Portuguese language.
- Enabled customers to edit the synthesized audios' prosody in a fine-grained way by implementing character-level prosody control on the ONNX version of the FastPitch TTS model.
- Conducted several subjective perceptual experiments to evaluate synthetic audio quality, naturalness and expresiveness.

Laboratory Intern

Paraíba, Brazil

@ LPS - Prototyping and Simulation Laboratory

2020 - 2021

- Enhanced lab automation by designing neural speech commands recognition systems.
- Encapsulated the ASR system in a local private LoRa network for IoT purposes.
- Enabled long distance voice control by developing a wearable prototype with an embedded microphone.

Education

M.Sc. in Computer Engineering

São Paulo, Brazil

@UNICAMP (State University of Campinas)

2021 - 2024

- GPA: 5/5
- Thesis: Cross-Speaker Style Transfer for TTS based on Singing Voice Conversion Data Augmentation, Style Filtering, and F0 Matching
- Study - On The Cross Modality of Pre-Training: Can models pre-trained in different domains adapt to a different one on a downstream task?
- Study - Meta-learning strategies to build a few-shot emotion classifier.

Exchange Student (Excellence Scholarship)

Paris, France

@Télécom Paris

2019 - 2020

- Studying Machine Learning, Statistics, Optimization, Digital Signal Processing, IoT and Telecommunications.

B.Sc. in Electronic Engineering

Paraíba, Brazil

@UFPB (State University of Paraíba)

2015 - 2021

- GPA: 8.38/10
- Research - Wind velocity estimation via the Extended Kalman Filter (DSP).
- Participated in the Electronics team of the national Aerodesign competition.
- Differential and Integral Calculus Tutor.