

AYMEN BESBES

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Profile

PhD researcher in healthcare AI and Computer Science Engineer, focusing on early Parkinson's disease detection from speech under low-resource conditions. My work explores the adaptation of speech foundation models through few-shot learning, cross-lingual and cross-task transfer, and parameter-efficient fine-tuning, with a growing focus on multimodal learning from heterogeneous clinical data.

Education

PhD in Information and Communication Sciences and Technologies ENET'COM, University of Sfax, Tunisia Topic: Speech-based Parkinson's Disease Detection using Low-Resource Learning	Feb 2025 – Present
Engineering Degree in Computer Science (AI specialization) National School of Computer Science (ENSI), Manouba, Tunisia	Sep 2021 – Sep 2024
Preparatory Classes in Mathematics and Physics IPEIS, Sfax, Tunisia	Sep 2019 – July 2021

Research Experience

PhD Researcher – AI for Healthcare
- Investigating speech-based biomarkers for early Parkinson's disease detection under low-resource conditions. - Developing adaptation strategies for speech foundation models via few-shot learning, cross-lingual transfer, and LoRA-based fine-tuning. - Evaluating robustness and generalization under noisy, heterogeneous, and cross-lingual speech data. - Designing experimental protocols to evaluate cross-dataset generalization and model robustness in real-world conditions.

Publications and Scientific Communications

- Under review:** Data-efficient detection of early-stage Parkinson's disease from speech using stability-aware foundation model fusion (KES 2026).
- In preparation:** LoRA-based adaptation of speech foundation models for multilingual Parkinson's disease detection (target journal: Biomedical Signal Processing and Control).

Teaching & Supervision

Teaching Assistant ENET'COM, Sfax, Tunisia	Mar 2026 – Present
Tutorials in databases (SQL, relational modeling, query optimization).	
Academic Supervision	Feb 2026 – Present
Co-Supervision of an engineering final-year project on explainable AI for Parkinson's speech analysis.	

Industry Experience

Software & AI Engineer Primatec Engineering, Sfax, Tunisia	Sep 2024 – Feb 2025
- Worked on automotive software systems and large-scale log analysis, including data processing, anomaly detection, and system validation. - Developed machine learning-based anomaly detection pipelines on large-scale real-world logs, contributing to system reliability and performance improvements in distributed environments.	

Technical Skills

Machine Learning: Deep Learning, Transformers, NLP, Few-shot Learning, Fine-tuning, Feature Extraction
Frameworks & Libraries: PyTorch, Scikit-learn, HuggingFace, TensorFlow
Data & Signal Processing: Speech Processing, EDA, Data Mining, Large-scale Data Analysis
Programming: Python, SQL
Tools & Systems: Linux, Git, Docker, Jupyter

Languages

Arabic (Native), French (Fluent), English (Professional); German (Beginner)