# APELETE ADODO SOSSOU

Machine Learning Research Engineer

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## PROFILE

Machine Learning Engineer and researcher graduated from the prestigious Master MVA – ENS Paris-Saclay, with solid experience in deep learning, spatio-temporal modeling, and medical imaging. Conducted a *research internship at Télécom Paris*, focusing on Alzheimer's disease progression modeling using self-supervised 3D encoders and probabilistic longitudinal models. Passionate about advancing *AI for health, neuroscience, and social impact*, and building reproducible scientific pipelines bridging theory and application.

## EDUCATION

09/2024 - 09/2025 **Master 2 : : Mathematics, Vision, Learning (MVA)**
*ENS Paris-Saclay / University of Paris Cité - Paris - Distinction*
- Relevant courses : *Deep Learning, Reinforcement Learning, Convex Optimization and Applications in Machine Learning, Biostatistics, Computer Vision and medical imaging*
- *GPA : 15.10 / 20 (High honours)*
- Paris Artificial Intelligence Research Institute Excellence Scholarship (€10 000)

09/2023 - 07/2024 **Master 1 : Computer Science**
*Université Sorbonne Paris Nord - Institut Galilée - Paris - Distinction*
- GPA : 1st semester : *16.01/20, rank : 1/50*. Overall : *15.29/20, rank : 5/50*
- Excellence Scholarship (€12 000) from the Graduate School

09/2021 - 07/2022 **Engineering Cycle (Year 1) : Computer Science**
*National School of Applied Sciences - Fès, Morocco - Distinction*
- GPA : *16.49 / 20 – Ranked 1/59*
- Fully funded scholarship from the Togolese government and the 'Agence Marocaine de Coopérations Internationales (AMCI)'

09/2019 - 07/2021 **Preparatory classes : Mathematics, Computer Science & Physics**
*ENSA - Fès, Morocco*
- Two years of intensive preparation in Mathematics, Computer Science and Physics
- *Ranked : 28/280 (1st year) and 9/261 (2nd year)*

## RESEARCH & INTERNSHIP EXPERIENCE

May – Aug 2025 · Master's Thesis – Télécom Paris (Institut Polytechnique de Paris) : *Spatio-Temporal Modeling of Alzheimer's Disease Progression – Supervisor: Prof. Pietro Gori*
- Developed a 3D self-supervised encoder for brain MRI (masked inpainting + contrastive learning).
- Designed probabilistic longitudinal models (state-space models, Gaussian Processes) for disease trajectory inference.
- Built a normative scoring and subject-level risk prediction framework. Implemented a fully reproducible Python/PyTorch pipeline with HPC (Slurm) calibration, bootstrap CI, and explainability analysis.

May – Jun 2024 · Research Internship – LaMSN, Sorbonne Paris Nord: Implemented and evaluated a model pruning technique from literature to optimize neural network efficiency and inference time.

- Feb – Apr 2024 · Research Initiation – Sorbonne Paris Nord :Studied and implemented 3D brain tumor segmentation networks (Dilated FCN) under Prof. Matei Basarab. Applied class-rebalancing and data-augmentation strategies; produced a comprehensive research report

## SELECTED TECHNICAL PROJECTS

**Accented English ASR Benchmark :**

- Built a complete evaluation pipeline for Whisper and Wav2Vec 2.0 on Frenchaccented English (Mozilla Common Voice).
- Achieved WER 0.218 vs 0.328, fully automated using Python, PyTorch, Hugging Face, and Slurm HPC.

**Noise-Robust ASR Evaluation** : Benchmarked ASR models under synthetic noise; Whisper outperformed Wav2Vec 2.0 (WER 0.253 vs 0.414).

**Medical Domain ASR Benchmark** : Collected and tested ASR models on radiology, pathology, and surgery datasets, reaching WER ≈ 0.0 with Whisper in specialized contexts.

**Time-Series Systems & Streaming Analysis** : Developed a full real-time anomaly-detection pipeline (Z-score, ARIMA) with automated data generation, forecasting, and visualization.

**Tech Stack**: Python, PyTorch, TensorFlow, scikit-learn, Hugging Face, NumPy, pandas, Matplotlib, Slurm, Git, CI/CD.

## CERTIFICATIONS

- Deep Learning Specialization – Coursera (Andrew Ng)
- Machine Learning Specialization – Coursera
- CS230 : Deep Learning (Stanford Online)
- CS231n : Deep Learning for Computer Vision (Stanford Online / Stanford Engineering)
- IBM Data Science Professional Certificate – Coursera
- Python for Everybody – University of Michigan

## HARD SKILLS

- **AI & Data Science:** Deep Learning (3D/CV/NLP), self-supervised learning, time-series modeling, probabilistic inference
- **Programming:** Python, C++, Java, C, C# Frameworks: PyTorch, TensorFlow, scikit-learn, Hugging Face, NumPy, pandas, R, MATLAB
- **Infrastructure & MLOps**: HPC (Slurm), Docker, Git, CI/CD, Cloud (GCP/AWS /Azure)
- **Analytics**: Statistics, anomaly detection, feature engineering, data visualization

## LEADERSHIP & COMMUNITY ENGAGEMENT

**Founder – Excellence Scholars (2023 – Present)**

- Founder of an international educational initiative promoting excellence scholarships and global study opportunities.
- Managing a community of ~3K+ followers (Facebook), 3 K+ (LinkedIn), 6 K YouTube views, 1 K+ WhatsApp members.
- Currently developing a web platform centralizing scholarship listings and admission resources for international students.
- Objective: make world-class education accessible to ambitious students worldwide.

## INTERESTS & LANGUAGES

- **Languages**: French (native), English (advanced), Spanish (notion)
- **Interests**: Music (trumpet), travel, education, AI innovation

## GITHUB / WEBSITE

GitHub : https://github.com/Adodo17SOSSOU/
Website Excellence Scholars : https://excellencescholars.com/