

Mamady NABÉ

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EXPERIENCE

Postdoctoral Research Assistant

Feb. 2023 – Present

Geneva University @ department of fundamental neuroscience

Geneva, Switzerland

Project goal: Understand the neural representations and mechanisms of speech perception and production in natural conversations using AI and intracranial EEG data

- Built an AI pipeline to orthographically transcribe and phonetically align thousands of multi-language audio files
Tools include openAI Whisper, Montreal Forced Aligner, Silero voice activity detection, PyAnnote
- Developed signal processing pipelines for analyzing human brain recordings (intracranial EEG)
Tools include MNE-Python, Scipy, Numpy, ScikitLearn
- Investigating the neural representations and mechanisms of multi-language speech production and perception
Tools include linear predictive modeling with mTRFpy
- Decoding words, syllables and phonemes from human brain recordings
Tools include wav2vec, gpt, (Flau)bert, whisper, mTRFpy, Nltk, Scikit Learn
- Collaborating on coding projects with team members, fostering a dynamic and innovative research environment
Enforce good Python software development principles, literature review to stay up-to-date

Teaching Assistant

Feb. 2025 – Now

University of Geneva

Geneva

- Taught the introduction to Deep Learning for neuroscience courses in the *Trends in Cognitive Neuroscience* class for Master students

Teaching Assistant

Nov. 2019 – Dec. 2022

Grenoble Alps University

Grenoble

- Taught various classes, including introduction to algorithms and systems architecture, employing languages such as Python, C, Java, and VBA

ML Researcher & Engineer

Sep. 2018 – Sep. 2019

Bull Atos @ data management team

Grenoble, France

Project goal: Develop a software suite for predictive maintenance in data centers with machine learning

- Built an end-to-end data processing pipeline
Tools include InfluxDB, Graphite, Kafka, ScikitLearn, Pandas, Numpy, SQL
- Built an ML prediction system for failures detection in data centers
Tools include ScikitLearn, SHAP, Keras
- Deployed a fully working proof of concept
Demonstrated with partners like Meteo France

Data Science intern

Feb. 2018 – July 2018

Bull Atos @ data management team

Grenoble, France

Project goal: Build a data analytics system to optimize high performance computing applications using machine learning

- Built an analytics system to optimize HPC systems with ML and optimization algorithms
Tools include ScikitLearn, Numpy, PySwarms, Scipy
- Contributed to open source software PySwarms used for optimization
- Obtained a patent for innovative contributions (*US20190392331A1*)
- Had a research paper accepted in ISC High performance conference

Embedded systems intern

June 2017 – Aug. 2017

VT3 @ software engineering team

Grenoble, France

Project goal: Port an existing embedded software for video processing from Windows to Linux

- Developed a linux driver for an embedded video system

EDUCATION

Grenoble Alps University

Grenoble, France

Ph.D. in Computer Science @ MSTII doctoral school

Nov. 2019 – March 2023

Thesis: Bayesian cognitive modeling of Speech Perception with a neurobiologically plausible temporal treatment, inspired by neural oscillations

- Research in a multi-disciplinary domain combining neuroscience, cognitive science and computer science
- Developed a cognitive model of human speech segmentation with Bayesian programming
- Taught various classes in computer science namely introduction to algorithms in python, database management in java, systems programming in C
- Published 1 journal paper and 3 conference papers
- Gave multiple talks to disseminate knowledge from my research work

Grenoble INP ENSIMAG & PHELMA

Grenoble, France

Engineering diploma, Double degree in Data Science and Embedded Systems

2015 – 2018

Thesis: HPC IO accelerator parameter inference based on Numerical Optimization

Lycée technique Mohamed V

Beni Mellal, Morocco

“Classes Préparatoires” for Engineering Schools

2012 – 2014

SELECTED PUBLICATIONS

Society for the Neurobiology of Language | *P. Morucci, M. Nabé, S. Sauppe, et al.*

October 2023

Neural encoding of syntactic structures during natural speech planning and production

Interspeech | *M. Nabé, J. Diard, J-L. Schwartz*

September 2022

Isochronous is beautiful? syllabic event detection in a neuro-inspired oscillatory model is facilitated by isochrony in speech

Frontiers in Systems Neuroscience | *M. Nabé, J-L. Schwartz, J. Diard*

June 2021

Cosmo-onset: A neurally-inspired computational model of spoken word recognition, combining top-down prediction and bottom-up detection of syllabic onsets

ISC High Performance | *L. Vincent, M. Nabé, G. Goret*

June 2018

Self-optimization strategy for io accelerator parameterization

MOOCs & ONLINE TRAININGS

Natural Language with attention models: Coursera MOOC by Younes Mourri, Lukasz Kaiser & Eddy Shyu

Probabilistic Graphical Models: Coursera MOOC by Daphne Koller

Deep Learning: Coursera MOOC by Andrew Ng

Practical Deep Learning: Online course by FastAI Jeremy Howard

Machine Learning with Graphs: Online course by Stanford Jure Leskovec

Data Engineer Learning path: Online course by Google

Data Scientist learning path: Online course by Tableau

SKILLS

Language: French (bilingual/native), English (Professional), Spanish (Elementary)

Programming Languages: Python, Java, C, Go, Rust, Julia, R, matlab, SQL

OS environments: Linux, Windows, Mac

Machine Learning: ScikitLearn, Pytorch, Keras, HuggingFace, SpeechBrain, LangChain, Nltk, SpaCy, mTRFpy

Visualization: Tableau, Matplotlib, Seaborn, Plotly, Altair

Developer Tools: Docker, Jenkins, SonarQube, Google Cloud Platform, VS Code, PyCharm, IntelliJ, Notebooks

Data management/processing: Pandas, Numpy, MNE-Python

Research: academic research, industrial research, oral communications, knowledge dissemination, bibliographic research

Miscellaneous: leadership, training, consulting, open source, reading, hiking, football, tennis, running

REFERENCES

Available upon request