ANA SOUSA

AI Research Engineer

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Ambitious engineer pursuing my passion and willing to improve. The ideal next step in the career of such a motivated engineer is to contribute to the research and development of technologies that can improve people's lives. I really value being in an international/diverse and innovative environment that encourages the continuous development of personal skills and knowledge.

AWARDS

3rd Place - World Data League 2023
Member of the team 'CEOS'. We finished the international competition in **3rd** place among **29** teams of best minds in Data Science.

AI EXPERIENCE/INTERESTS:

Machine Learning for Production (MLOPs):
Professional experiencie @Bosch
Projs & repository: MLOPs_Specialization
Training by @Google @TensorFlow @DeepLearning.AI

2D/3D Computer Vision:
Professional experiencie @InescTech
Projs & repository: Advanced_CV
Training by @TensorFlow @DeepLearning.AI @HuggingFace

Natural language Processing & Large Language models:
Professional experiencie @Utwente
Projs & repository: NLP_LLM,
Training by @LAMINI @Google Cloud @AWS @DeepLearning.AI

Generative AI (Gen AI):
Professional experiencie @Utwente
Projs & repository: Master Thesis; NLP_LLM
Training by @LAMINI @Google Cloud @AWS @DeepLearning.AI @HuggingFace

Other ML Topics (github repository AMfeta99) : Time-series & forecasting; Anomaly detection; Reinforcement Learning, etc..

SKILLS

Languages:
Portuguese (native)
English (advanced)
Spanish (beginner)
Dutch (beginner)

Soft-Skills:
Adaptability
Team communication/work
Problem solver & Proactive
Empathy
Curiosity

Machine Learning Tools:
Data Manipulation (Pandas, Numpy, Scipy)
Machine Learning (Scikit- Sklearn, Tensorflow, Keras)
Prog Languages (Python, Matlab, C++, SQL)

WORK EXPERIENCE

AI Researcher & Solution Developer
2023 - Present (1 year)

- Connected manufacturing project (Sensors, 5G and AI).
- Understand the whole system and provide the appropriate AI algos in the filed of Audio processing, MLops, efficient Pipeline creation for AI continues learning and deployment
- Support the SW team and develop software for process optimization/monitoring;
- Responsible for a Strategic project that aims to improve and continuously monitor production processes, using AI;

Keywords: *MLOps, Abnomaly Detection, Classification, Signal Processing,Tensorflow, Keras*

Researcher
2021-2023 (2 years & 2 months)

Section of Cognition, Data and Education | BMS faculty UT | Enschede, NL

- Domain translation of Clinical Neurophysiological research questions/needs into Data Science and ML/DL fields. This mediating capacity allowed successful collaboration of CoDE and CNPH groups, boosting the development of project and clinical validation.
- Publication of the developed unsupervised and semi-supervised deep learning pipelines for detection of EEG anomalies.
- Implementation and optimization of robust algorithm with a sensitivity of **81.9%** and a specificity of **91.7%**

Keywords*: EEG, Abnomaly Detection, Autoencoder, VAE, VAE-GANs, Diffusion Models, Gen AI, Signal Processing,Tensorflow, Keras,*

Assistant Researcher (Master's Thesis)

Clinical Neurophysiology Group (CNPH) |TechMed Center UT | Enschede, NL

- Review of state-of-the-art approach for captioning in image/signal/video and Inspired on that development, troubleshooting and comparison of **6** pipelines for EEG captioning.
- Presentation and defense of the thesis before a prestigious jury composed of AI and neurologist experts, having obtained the grade of **19/20**, result of **excellence** (among **10%** of higher grades).
- Awarded for the performance in the master's thesis "Learning to write medical reports from EEG data." with a job position as Researcher.

Keywords: Attention models, Captioning, Classification, Video, Image, Time-series, Encoder-Decoder, NLP, Numpy, SciPy

Junior Researcher (Erasmus+ Internship)

Clinical Neurophysiology Group (CNPH) |TechMed Center UT | Enschede, NL

- Research and implementation of various data augmentation approaches, from traditional signal transformation to more complex data approach, generative models like GANs.
- Proposing and explore the use of different forecasting models for data augmentation.
- Provided important insight into EEG properties and behavior/potential of different approaches, stimulated further research and emergence of new projects.
- Invited to develop a master's thesis at the institution, after obtaining the **Excellent** grade, **19/20** in this Erasmus+ internship, "GANs and Data Augmentation Prediction Models in the Detection of Interictal Epileptiform Discharges (IEDs)".

Keywords: *Time-series, Biosignal, GANs, CNN, LSTM / GRU and hybrid models.*

Summer Internship

2020-2021 (6 months)

Visual Computing and Machine Intelligence Group | INESC Technology and Science | Porto, PT

- Impact of facial dynamic fusion information and DBN in the performance of Drowsiness detector (AUTOMOTIVE project.)
- Collaboration with other master and PhDs students for the development of robust Drowsiness detector system to detect driver fatigue.

Keywords: *Computer Vision, Facial dynamic fusion , DBN, OpenCV, Scikit-learn*

Researcher intern

Biomedical Imaging Lab from C-BER | INESC Technology and Science | Porto, PT

- Characterized lesions associated with lung cancer, using an annotated computed tomography dataset.

Keywords: *CT scans, Neural networks, Computer Vision, Image Segmentation*

EDUCATION

ERASMUS+ Internship

Institution: Faculty of Science and Technology, University of Twente

February 2022 to August 2022 — ***Final Grade:*** *19 / 20 (A)*

February 2021 to July 2021 — ***Final Grade:*** *19 / 20 (A)*

Bachelor & Master in Bioengineering - Biomedical Engineering

Institution: Faculty of Engineering, University of Porto

2017 - 2022 — ***Final Grade:*** *18 / 20 (A)*

HOBBIES

Member:

2021-2022

Institution: *IEEE student Branch*

Member of IEEE Engineering in Medicine and Biology. Organize workshops, and collaborate in the development of EMBS projects together with other students

Volunteer staff:

2022- 2023

Tankstation: Multicultural foundation with sociocultural meeting place that organizes and promotes musical, artistic and cultural activities and prepares food from around the world.

Green Vibration: Event organization & Bartender in a truly unique music festival with it's own distinct identity with 3000 attendees and multiple stages in 10 years time.

Sports:

Swimming (federated athlete)

2009 - 2014

Athletics (federated athlete)

2013 - 2019

Dance (Lindy hop)

2023 - Present

OTHER INTERESTS

Music; Dance; AR/VR; Psychology