ANDRÉ FILIPE DE SOUSA FERREIRA

PhD candidate in Biomedical Engineering
MSc in Biomedical Engineering (Medical Informatics)

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DESCRIPTION

PhD student in Biomedical Engineering (Medical Informatics) at the University of Minho. Multiple award-winner medical AI expert with proven success in competitive Healthcare Data Analysis.

4+ years of experience in developing complete pipelines for **ML** and **DL** tasks, **Computer Vision**, with a particular focus on innovative networks (GAN, VAE, DDPMs, DNNs, ViT, Transformers, LLMs), from design to implementation, evaluation, testing and deployment.

As a researcher, I have worked on **medical/AI projects** and gained experience in publishing articles (MIA, MDPI, MICCAI, ISBI) and peer reviewing (including MIA, MDPI, MICCAI, ISBI, TVCJ and Springer Nature) .

I am currently deepening my knowledge on the generation of **synthetic data**, **foundation models** and **German**. **Tutoring on free time**.

WORK EXPERIENCE

PhD Candidate - FCT

University of Minho, Portugal

Sept. 2022 – Aug. 2026? | Braga, Portugal

- Generation of synthetic medical data

Visiting Researcher

RWTH, Uniklinik, Aachen, Germany

Sept. 2023 – March 2024 | RWTH

- GANs and Diffusion Models (Deep Learning);
- Computer Vision; Machine Learning;
- Medical imaging modalities (MRI, CT, PET) of humans;
- Docker containers; Cloud computing;
- Tutoring, expert in machine learning/data analysis.

Research Assistant

Institute for Artificial Intelligence in Medicine, University Hospital Essen

March 2022 – Aug. 2022 | IKIM

- GANs (Deep Learning);
- Computer Vision; Machine Learning;
- Medical imaging modalities (MRI, CT, PET) of humans;
- Docker containers; Cloud computing.

Internship Trainee

Université Paris-Saclay - Institut des sciences du vivant Frédéric Joliot

May 2021 – Aug. 2021 | NeuroSpin

- GANs (Deep Learning) / Computer Vision;
- 3D MRI scans rat brain (11.7 Tesla Bruker scanner).

DISTINCTIONS

Award

Best Graduate Student of the School of Engineering

Academic year 2020/2021 | Braga, Portugal

Winner of BraTS 2023 challenge Task 1

2023

Winner of BraTS-GoAT 2024 challenge

2024

Winner of BraTS 2024 challenge Tasks 1

2024

Podium on the BraTS 2024 challenge Tasks 3 and 7

2024

Winner of HNTS-MRG24 challenge Tasks 1

2024

Winner of BraTS challenge Tasks 8, 9

2025

Scholarship

Gulbenkian Merit Scholarship "Gulbenkian Mais"

2016/2021 | Braga, Portugal

Scholarship

Fundação para a Ciência e a Tecnologia, I. P. (FCT) - PhD studentships

2022/2026 | Braga, Portugal

Grant

Advanced Research Opportunities Program (AROP)

2023/2024 | Aachen, Germany

LANGUAGES

EDUCATION

Integrated Master's in Biomedical Engineering - Medical Informatics

University of Minho - Grade: 17/20

September 2016 – January 2022
Braga, Portugal

- Thesis: "Generation of Synthetic Brain MRI Data" - Grade: 19/20

Machine Learning

Custom Models, Layers, and Loss Functions with TensorFlow

November 2021 — Coursera

MONAI Bootcamp

IKIM - Institute for Artificial Intelligence in Medicine

May 2022 — Essen, Germany

TEACHING

MICCAI Tutor RISE

2025 - Now
MICCAI

Tutoring master students

University of Minho

September 2021 - Now
Braga, Portugal

AI in Medicine Seminar

Universität of Duisburg-Essen

December 2023 - March 2024
Essen, Germany

Program Committee

ShapeMI MICCAI

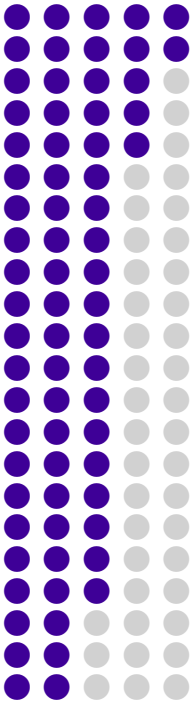
2024/2025
Braga, Portugal

Invited Lecturer

University of Minho

sporadic engagements since 2023
Braga, Portugal

DIGITAL SKILLS



Main skills: Python, Pytorch, Tensorflow
Computer Vision, Deep Learning, Machine Learning

FIRST-AUTHOR PUBLICATIONS

- Ferreira, A., Jesus, T., Puladi, B., Kleesiek, J., Alves, V., & Egger, J. (2024). Improved multi-task brain tumour segmentation with synthetic data augmentation. *arXiv preprint arXiv:2411.04632*.
- Ferreira, A., Li, J., Pomykala, K. L., Kleesiek, J., Alves, V., & Egger, J. (2024). Gan-based generation of realistic 3d volumetric data: A systematic review and taxonomy. *Medical image analysis*, 103100.
- Ferreira, A., Luijten, G., Puladi, B., Kleesiek, J., Alves, V., & Egger, J. (2024a). Brain tumour removing and missing modality generation using 3d wdm. *arXiv preprint arXiv:2411.04630*.
- Ferreira, A., Luijten, G., Puladi, B., Kleesiek, J., Alves, V., & Egger, J. (2024b). Generalisation of segmentation using generative adversarial networks, 1–4.
- Ferreira, A., Solak, N., Li, J., Dammann, P., Kleesiek, J., Alves, V., & Egger, J. (2024). How we won brats 2023 adult glioma challenge? just faking it! enhanced synthetic data augmentation and model ensemble for brain tumour segmentation. *arXiv preprint arXiv:2402.17317*.
- Ferreira, A., Solak, N., Li, J., Dammann, P., Kleesiek, J., Alves, V., & Egger, J. (2023). Enhanced data augmentation using synthetic data for brain tumour segmentation. In *International challenge on cross-modality domain adaptation for medical image segmentation* (pp. 79–93). Springer.
- Ferreira, A., Magalhães, R., & Alves, V. (2022). Generation of synthetic data: A generative adversarial networks approach, 236–261.
- Ferreira, A., Magalhães, R., Mériaux, S., & Alves, V. (2022). Generation of synthetic rat brain mri scans with a 3d enhanced alpha generative adversarial network. *Applied Sciences*, *12*(10), 4844.

CO-AUTHORED PUBLICATIONS

- Solak, N., Ferreira, A., Luijten, G., Puladi, B., Alves, V., & Egger, J. (2025). Gbm-reservoir: Brain tumor (glioblastoma multiforme) mri dataset collection with ground truth segmentation masks. *Data in Brief*, *58*, 111287.
- Alves, A. C., Ferreira, A., Puladi, B., Egger, J., & Alves, V. (2024). Deep dive into mri: Exploring deep learning applications in 0.55 t and 7t mri. *arXiv preprint arXiv:2407.01318*.
- Moradi, N., Ferreira, A., Puladi, B., Kleesiek, J., Fatemizadeh, E., Luijten, G., … Egger, J. (2024). Comparative analysis of nnunet and mednext for head and neck tumor segmentation in mri-guided radiotherapy. In *Challenge on head and neck tumor segmentation for mri-guided applications* (pp. 136–153). Springer.
- Motmaen, I., Xie, K., Schönbrunn, L., Berens, J., Grunert, K., Plum, A. M., … Egger, J., et al. (2024). Insights into predicting tooth extraction from panoramic dental images: Artificial intelligence vs. dentists. *Clinical Oral Investigations*, *28*(7), 381.
- Van Meegdenburg, T., Luijten, G., Kleesiek, J., Puladi, B., Ferreira, A., Egger, J., & Gsaxner, C. (2024). A baseline solution for the isbi 2024 dreaming challenge, 1–3.
- Li, J., Zhou, Z., Yang, J., Pepe, A., Gsaxner, C., Luijten, G., … Li, W., et al. (2023). Medshapenet–a large-scale dataset of 3d medical shapes for computer vision. *arXiv preprint arXiv:2308.16139*.
- Lindo, M., Ferreira, A., Egger, J., & Alves, V. (2023). Generation of synthetic x-rays images of rib fractures using a 2d enhanced alpha-gan for data augmentation, 288–297.
- Heiliger, L., Marinov, Z., Hasin, M., Ferreira, A., Fragemann, J., Pomykala, K., … Kleesiek, J. (2022). Autopet challenge: Combining nn-unet with swin unetr augmented by maximum intensity projection classifier. *arXiv preprint arXiv:2209.01112*.
- Li, J., Ferreira, A., Puladi, B., Alves, V., Kamp, M., Kim, M.-S., … Egger, J. (2022). Open-source skull reconstruction with monai. *arXiv preprint arXiv:2211.14051*.