Eduardo **Medeiros**

Researcher and Master's Student

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Summary

I started learning how to program by myself in 2013/2014 because I have always wanted to discover how things are made, and what needs to be done for a computer to perform certain tasks.

In 2020 I've finished a **Bachelor's degree in Computer Science Engineering** at Universidade de Évora with a final classification of **16/20**.
In 2023 I've finished a **Master's degree in Computer Science Engineering** at Universidade de Évora with a final classification of **18/20**.

Interests: **Algorithm optimisation**, **machine learning** applied to real-world problems, data science and engineering, **IoT** with multimodal interaction. Both **Automatic Speech Recognition** (**ASR**) and **Natural Language Processing** (**NLP**), in their ways, combine the aforementioned, making them extremely interesting topics.

Hobbies: Exercise (gym, ex water polo player), play the guitar, and some video games with friends.

Experience

Universidade de Évora

Évora, Portugal

Researcher - Scholarship

Oct 2021 - May 2022

- Participated in a project in partnership with *Altice Labs*.
- **Goal**: develop an **Automatic Speech Recognition**/Speech To Text system using **deep learning** for European Portuguese to remove the dependency on 3rd services.
- Toolkit used: **Python**, **NVIDIA NeMo**, framework for developing GPU accelerated deep neural models based on **PyTorch** and **Lightning**, **Docker**, environment containerisation and replication, **Slurm**, job scheduling.
- Best performance: **WER = 0.0503**.
- The work was developed in a team of 2 people mentored weekly by 2 professors.

Universidade de Évora

Évora, Portugal

Researcher - Scholarship

Mar 2021 - Set 2021

- Researcher at project NIIAA – Núcleo de Investigação em Inteligência Artificial em Agricultura (Research Center on Artificial Intelligence in Agriculture).
- **Goal**: development of a customised machine learning crop monitoring system applied to precision and intelligent agriculture.
- **Developed work**: created a regression model using the KNN algorithm to predict the soil's electric conductivity value from satellite radar images.
- Toolkit used: **Python**, **pandas** and **numpy** libraries for data pre-processing, **scikit learn** for the **model creation**.
- Best performance: R^2 = 0.888.

Skills

Programming Languages	Python, Java, C, SQL
Tools and frameworks	NVIDIA NeMo, Scikit-Learn, Pandas, NumPy, Matplotlib, Spring Boot, FastAPI
Document Writing	LaTeX, Markdown
Version Control	Git, GitHub, GitLab
Languages	Portuguese (native), English (advanced), Spanish (intermediate)

Education

Universidade de Évora

Évora, Portugal

Master's degree, Computer Science Engineering

Sep 2020 - Feb 2023

- **Final grade**: 18/20
- **Relevant subjects**: Machine Learning, Data Mining, Computer-Based Decision Support Systems and Multimodal Systems.
- **Thesis**: ***Deep learning for speech to text transcription for the Portuguese language*** - developed throughout the research project with Altice Labs - Grade: 19/20 - *Link*.

Universidade de Évora

Évora, Portugal

Bachelor's degree, Computer Science Engineering

Sep 2017 - Jun 2020

- **Final grade**: 16/20

Publications

Optimized European Portuguese Speech-To-Text using Deep Learning (link) *Évora*

Oct 2022

- **Objective**: develop an **Automatic Speech Recognition** System for the European Portuguese language.
- **Goal**: create a model using **deep learning** algorithms to transcribe audio recordings in the European Portuguese language. *Page 125-126*.
- Best performance: **WER = 0.0503**

Predicting soil electro-conductivity using Sentinel-1 images (link) *Évora*

Nov 2021

- **Objective**: develop a customised crop monitoring system with advanced technologies applied to precision and intelligent agriculture
- **Goal**: create a **regression model** by using machine learning algorithms, such as k-nearest neighbours (KNN), Ridge, Lasso, and LinearSVM, to **predict the soil's electric conductivity** value from satellite **Sentinel-1** radar images. *Page 51-52*.
- Best performance: R^2 = 0.888

Extracurricular Activity

Universidade de Évora *Évora, Portugal*

Organising Committee *Nov 2021*

Integrated the organising committee for the ***RECPAD 2021***, the annual Portuguese Conference on Pattern Recognition.

Universidade de Évora *Évora, Portugal/Online*

Organising Committee *Oct 2020*

Integrated the organising committee for the ***RECPAD 2020***, the annual Portuguese Conference on Pattern Recognition.

Universidade de Évora *Évora, Portugal*

Attendee/Participant *Nov 2018 - Nov 2018*

- Participated in ***"EIT Health Innovation Day"*** held at Universidade de Évora.
- Placed **3rd** on a group contest where each group presented its business idea.

Universidade de Évora *Évora, Portugal*

Mentor *Jul 2018 - Jul 2018*

- Worked as a mentor in the course "Introdução à Internet of Things" integrating a project named "Ciência Viva no Laboratório – Ocupação Científica de Jovens nas Férias" hosted by the Department of Computer Science of Universidade de Évora.
- **Goal**: help the participants complete the course tasks.