Guilherme Ribeiro

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Education

2023–Present **MSc in Informatics Engineering - Artificial Intelligence**, *Faculty of Sciences*, University of Lisbon.
Thesis theme: Anomaly Detection in Computer Vision
Coursework: Deep Learning, Advanced Machine Learning, Mobile Robotics, Multi-agent Systems, Knowledge Graphs, Artificial Life, AI in Games, Natural Language Interaction

2019–2023 **BSc in Informatics Engineering**, *Faculty of Sciences*, University of Lisbon.

Experience

Sep. 2022 – Present **Data Analyst / Member of the IT Department**, *Erasmus Student Network*, Lisbon.
- Organized dozens of events for Erasmus Students (Ex.: Tour Guides, Chill Outs and Parties)
- Developed a tool that helps Erasmus Students find housing in Lisbon, in Python
- Developing an application that tracks the activity of ESN volunteers, to reward them properly
- Organised data in a way that it can be presented to the ESN partners

Jul. 2024 – Sep. 2024 **Erasmus+ Internship**, *AI-aided Knowledge Discovery Lab - University of Utrecht*, Utrecht.
- Contributed to the "Simulation-based Active Learning for Systematic Reviews: A Scoping Review of Literature" paper
- Contributed to the ASReview-NEMO package
- Machine Learning models testing with Pytest
- ASReview classifier models hyper-parameter optimization with the Optuna framework

Apr. 2018 – Oct. 2020 **Street Volunteer**, *Comunidade Vida e Paz*, Lisbon.
Member of a team that distributes food to the homeless and people in need

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Publications

Sep. 2024 **Simulation-based Active Learning for Systematic Reviews**, *A Scoping Review of Literature*, *Jelle Teijema, **Guilherme Ribeiro**, Sofie Seuren, Daniel Anadria, Ayoub Bagheri, and Rens van de Schoot*.
Pre-print

Projects

Sep. 2024 – Preset **Master Thesis**, *Multimodal perception for fault tolerant human-robot interaction*.
Fine-tuned an action recognition model for Human-robot interaction while producing Spatial-Temporal attention maps. Parallelly, we used a Scene Graph Generator to create a graph description of the environment where the robot is present. These two modalities, alongside with the raw robotic limb sensor values, are fed into a Modality Fusion model, thus producing a single feature vector that correctly represents the scene. Then, using this feature vector, we trained a Feature Reconstruction Model, that is able to reconstruct "normal" interactions. If the reconstruction value is higher than the norm, we classify the action as an anomaly

Jul. 2024 – **ASReview Hyper-Hyper**, *AI-aided Knowledge Discovery Lab - University of Utrecht*, Utrecht.
Sep. 2024 ASReview Hyper-Hyper is a repository designed to optimize machine learning models within the ASReview ecosystem using the Optuna framework. GitHub repo
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May 2024 **Model comparison for Pool Detection in aerial images**.
Standard object detection methods are widely used for various tasks. Meanwhile, with the appearance of transformers, their use for object detection has become more and more popular. We study this new approach, by experimenting and comparing the different methods. We use pre-implemented versions of the various algorithms and train them for this specific task. We experiment on a custom dataset which results from merging two different datasets publicly available on the Kaggle platform. GitHub repo

Technical Skills

Programming Languages Java, Python, C, SQL, JavaScript

Frameworks Scikit-learn, PyTorch, TensorFlow, Keras, Optuna, Pytest

Concepts Machine Learning, Deep Learning, Reinforcement Learning, Natural Language Processing, Git

Languages

Portuguese **Native**
English **Proficient**   *C2*
Dutch **Intermediate**

Certifications

Jul. 2020 **Certificate of Proficiency in English (C2)**.
Cambridge Assessment English