

NUNO RODRIGUES

☎(+351)-915-207-737

Nuno Miguel Vasconcelos Rodrigues

✉nuno.mvrodrigues1@gmail.com 🔗Google Scholar

EDUCATION

- PhD in Computer Science** 2020 - 2024 (*In Submission*)
Faculty of Sciences of the University of Lisbon, Portugal
Champalimaud Foundation, Portugal
Skills acquired: Medical imaging analysis, Dataset curation, Medical computer vision
- Master in Computer Science** 2018 - 2020
Faculty of Sciences of the University of Lisbon, Portugal
Skills acquired: Neuroevolution, Fitness landscape analysis, Metaheuristics
Grade: 18/20, Thesis: 20/20
- Bachelor in Computer Science** 2013 - 2018
Faculty of Sciences of the University of Lisbon, Portugal

TECHNICAL SKILLS

- Languages:** Python, Java
- Machine Learning Frameworks:** Sckit-Learn, Keras, PyTorch, Monai, nnUNet, Ultralytics
- Domains:** Computer Vision, Tabular Data, Medical Imaging, Evolutionary Computation
- Additional interests:** LLMs for RAG, Recommendation Systems, Adversarial Attacks

COLABORATIONS

- IPMA** *Dec 2023 - Present*
- Developing computer vision models to predict the age of *Micromesistius poutassou* fishes based on the growth rings present in their otoliths.
- Mare & DOCAPESCA** *Jul 2022 - Present*
- Developing machine learning models to differentiate wild-caught from aquaculture-grown bream, sea bass and octopi based on elemental signature profiles.
- CHAMPALIMAUD** *Oct 2020 - Present*
- Developing prostate whole-gland segmentation and lesions detection models that were used in the clinic for histopathology validation.
- MARE** *Jul 2020 - Sep 2021*
- Developed deep learning models to detect the presence of emerging contaminants in microalgae.
- Developed machine learning classifiers to predict the origin of octopus caught in the Portuguese shore based on elemental signature profiles.
- ISA** *Apr 2018 - Dez 2018*
- Developed a genetic-programming based pixel classifier for remote-sensing applications.

PROJECTS

- Horizons2020 ProCancer-I, Champalimaud** *Oct 2020 - Sep 2024*
- ProCancer-I's vision is to deliver a prostate cancer (PCa) AI platform featuring a unique collection of PCa mpMRI images worldwide, in terms of data quantity, quality and diversity; to focus on delivering novel AI clinical tools based on a three-stage ensemble modelling process for advancing characterization of PCa lesions, assessment of the metastatic potential, and early detection of disease recurrence.
- BINDER, LASIGE & Champalimaud** *Jan 2021 - Aug 2021*
- The project's objective is to improve the state of the art in Radiomics analysis of breast and rectal cancer, using existing and novel Machine Learning and Deep Learning methods.

OPTOX, LASIGE & Champalimaud

Jul 2020 - Dec 2020

- The OPTOX Project aims to apply non-invasive high-throughput screening techniques, namely pulse amplitude modulated fluorometry, laser induced fluorescence and spectroradiometry, as tools for ecotoxicology assessment in marine phototrophs exposed to emerging contaminants. These tests will be applied in model organisms and integrated through AI for ecotoxicological indexes development. This multidisciplinary approach intends to produce innovative ecotoxicology tests of great added value for future management requirements and impact assessment.

PREDICT, LASIGE

Jan 2020 - Jun 2020

- Propose cutting-edge machine learning techniques to address the problems emerging from EMR mining. The envisaged methods will be ultimately applied in therapy selection of rheumatic diseases.

PERSEIDS, LASIGE

Feb 2019 - Oct 2019

- Personalizing cancer therapy through integrated modeling and decision.
- Developing a Genetic Programming algorithm capable of performing efficient feature selection and subsequently using the new dataset to obtain results comparable and/or higher than state-of-the-art models.

GM3, BIOISI & ISA

Apr 2018 - Dec 2018

- Developing a genetic programming based pixel classifier for remote-sensing applications.

MAIN PUBLICATIONS

Analysis of domain shift in whole prostate gland, zonal and lesions segmentation and detection, using multicentric retrospective data.

Computers in Biology and Medicine, 2024

Impact of scanner manufacturer and endorectal coil on prostate cancer mpMRI classification with deep-learning — a multicentric retrospective study

Radiology AI, 2024 [under review]

A comparative study of automated deep learning segmentation models for prostate mri

Cancers, 2023

SLUG: Feature Selection Using Genetic Algorithms and Genetic Programming

European Conference on Genetic Programming (EuroGP), 2022

Artificial Intelligence Meets Marine Ecotoxicology: Applying Deep Learning to Bio-Optical Data from Marine Diatoms Exposed to Legacy and Emerging Contaminants

Biology, 2021

Plotting time: On the usage of CNNs for time series classification

arXiv, 2021

A Study of Generalization and Fitness Landscapes for Neuroevolution

IEEE Access, 2020

Ensemble Genetic Programming

European Conference on Genetic Programming (EuroGP), 2020

Full list of publications available in my  Google Scholar

TEACHING & RESEARCH

Sustainable fisheries stock assessment *Dec 2023 - Present*

- Developing a project proposal for the SACCCT (Projetos de Investigação Científica e Desenvolvimento Tecnológico (IC&DT)) FCT project grants regarding developing computer vision models for fisheries stock assessment using fish otolith data. This project is being developed in partnership with the Portuguese Institute for Sea and Atmosphere (IPMA).

Master thesis co-supervisor

2021 - 2022

- Unofficial co-supervisor of two master thesis in the elective year of 2021-2022.

Assistant Professor, NOVA IMS

Sep 2020 - Jul 2023

- Planning and lecturing the practical classes for the Computational Methods for Optimization course.
- Planning and lecturing the practical classes for the Neuroevolution course.

AWARDS

2023 - Academic and Social Merit Scholarship by Huawei/.PT, Lisbon, Portugal

2021 - PhD Grant by Fundação para a Ciência e a Tecnologia (FCT), Lisbon, Portugal

2020 - Merit Scholarship by Direção-Geral do Ensino Superior (DGES), Lisbon, Portugal

ACADEMIC & SCIENTIFIC ACTIVITIES

Member of the local organizing team of GECCO 2023

Member of the Program Committee of the NE track at GECCO 2023

Member of the Program Committee of the NE and EML tracks at GECCO 2024

External reviewer for IJCAI 2023 and 2024 Reviewer for multiple Journals on the topics of machine learning, deep learning, evolutionary computation and medical imaging

LANGUAGES

- Portuguese - Native (C2)
- English - Proficient (C2)
- Spanish - Basic (A2, learning)
- Italian - Basic (A1, learning)