

Rafael Oliveira, PhD(c)

CLINICAL BIOINFORMATICIAN

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PROFESSIONAL SUMMARY

With a background spanning Biology, Molecular Biomedicine, Applied Statistics, and Clinical Bioinformatics, I am now pursuing a PhD in Medical Technology focused on stratifying small-cell lung cancer patients and identifying biomarkers of treatment resistance. My work centers on applying Clinical Bioinformatics, Biomedical Data Science, and Transcriptomics to advance precision oncology and develop Clinical Decision Support tools using machine learning and multimodal data. With industry experience in data science, full-stack development, radiomics, and bioinformatics, I bring a versatile skill set suited for translational research in the Pharma and Biotech sectors.

SKILLS AND EXPERTISE

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|------------------------------------|----------|---------------------------|
| ○ Bioinformatics (Transcriptomics) | ○ Python | ○ Cloud (Microsoft Azure) |
| ○ Medical Statistics | ○ R | ○ Microsoft Excel |
| ○ Machine Learning | ○ Bash | ○ PostgreSQL |

PROFESSIONAL EXPERIENCE

R1 Researcher in Bioinformatics (Norwegian University of Science and Technology, Norway) 09/2023 – Present

- The doctoral research project (100% computational) I'm working in is centered around the stratification of patients (i.e. cancer subtyping, high risk groups for progression/metastasis, etc), and the identification of biomarkers and individuals who may or may not respond to diverse treatment strategies such as chemoradiotherapy and immune checkpoint inhibitors in the context of small-cell lung cancer (SCLC) using transcriptomics data (bulk, scRNA and spatial transcriptomics).
- **Skills & Tools:** Bash, Python, R, Medical Statistics, Bioinformatics, Transcriptomics (Bulk, scRNA and spatial transcriptomics), VisiumHD, Scanpy, Squidpy, Novae, decoupler, Git, NGS, PyTorch

Bioinformatician & Software Development Manager (Artificial Intelligence Expert, Remote) 04/2022 – 09/2023

- Temporary part-time position as a Bioinformatician & Software Development Manager in AI at a start-up to help with the development of an MVP that is capable of extracting ready to use insights from biomedical data. Developed a part of the MVP by integrating large language models (LLMs) and multi-agent systems (e.g., LangGraph, LangChain) with bioinformatics pipelines (e.g., RNASeq, DESeq, GSEA) on Azure Cloud. Implemented resource auto-scaling and conducted data engineering and feature selection to optimize these pipelines for machine learning algorithms.
- **Skills & Tools:** Python, Machine Learning, CrewAI, LangGraph, LangChain, Microsoft Azure, LLMs, Streamlit, Nextflow

Data Scientist (BrandDelta, Porto, Portugal) 04/2022 – 09/2023

- BrandDelta's main goal is to offer solutions to businesses that want to turbocharge their insights and increase their market share using Artificial Intelligence.
- **Skills & Tools:** Python, Scikit-Learn, Statistics, Automation, Data Engineering, HTML, Streamlit, Flask, Git, Microsoft Excel, Microsoft Azure, Azure Databricks, Natural Language Processing (NLP), PyTorch, PySpark

Bioinformatics Volunteer (University of Aveiro, Aveiro, Portugal) 10/2021 – 03/2022

- I conducted computational analyses of SARS-CoV-2 patient sequences by quantifying single-nucleotide variants (SNVs) and identifying viral lineages based on characteristic genetic signatures, using both Python and R. This work involved extensive data engineering, cleaning, transforming, and structuring large genomic datasets with tools such as pandas and numpy, followed by dimensionality reduction (PCA) and predictive modeling, including multinomial logistic regression. I applied descriptive and inferential statistical methods to interpret results and ensure analytical rigor. Findings were communicated through poster presentations at conferences in Bioinformatics and Medical Statistics, including the Bioinformatics Open Days at the University of Minho.

- **Skills & Tools:** Bash, Python, R, Medical Statistics, NGS, Bioinformatics, Biopython

Full-Stack Developer Trainee (Learning2Trading, Aveiro, Portugal)

07/2021 – 10/2021

- I developed informatic pipelines to support investment decision-making, combining full-stack development skills across Python, SQL, PHP, JavaScript, HTML, CSS, and Bootstrap. My work included building interactive financial dashboards and visualizations using tools such as Google Charts (pie charts), TradingView (candlestick charts), and ApexCharts (heatmaps). I applied risk-management principles to financial-market analysis while using web scraping and data-mining techniques to retrieve and process market data. Alongside these technical responsibilities, I continuously expanded my knowledge of financial instruments, including ETFs, CFDs, options, and forex, to strengthen the analytical foundations of the tools and insights I developed.
- **Skills & Tools:** PHP, Javascript, HTML, CSS, R, SQL

EDUCATION AND CERTIFICATIONS

♥ For detailed courses taken on each degree, feel free to check my GitHub website or LinkedIn page.

Ph.D (180 ECTS), Medical Technology Norwegian University of Science and Technology	09/2023 – 09/2026 Norway
MSc (120 ECTS), Clinical Bioinformatics University of Aveiro	10/2021 – 07/2023 Portugal
Postgraduate diploma (60 ECTS), Applied Statistics to Health Sciences University of Aveiro	09/2022 – 06/2023 Portugal
Postgraduate diploma (60 ECTS), Molecular Biomedicine University of Aveiro	09/2020 – 06/2021 Portugal
BSc (180 ECTS), Biology University of Aveiro	09/2017 – 06/2020 Portugal

CERTIFICATIONS AND PROFESSIONAL DEVELOPMENT COURSES

♥ Feel free to check all courses and certificates on my GitHub website or LinkedIn page.

- Deep Learning Specialization (Coursera)
- Clinical Investigator Certification (NOVA Medical School)
- Understanding Clinical Research: Behind the Statistics (Coursera)
- AI for Medicine Specialization (Coursera)
- Data Science and Computational Thinking (Universidade de Stellenbosch)
- Drug Development and Drug Discovery (Coursera)
- Machine Learning e Big Data (UNAVE)
- R programming (IBM and Coursera)
- Python programming (IBM and Coursera)
- Career Success - Project Management, Leadership... (Coursera)
- ...

PUBLICATIONS

Oliveira, Rafael; Martinho, Beatriz; Vieira, Ana; Rocha, Nelson Pacheco (2024): Radiomics and Radiogenomics Platforms Integrating Machine Learning Techniques: A Review. In. World Conference on Information Systems and Technologies: Springer, Cham, pp. 429–438. Available online at https://link.springer.com/chapter/10.1007/978-3-031-45648-0_42.

LANGUAGES

Portuguese
Native speaker

Spanish
B2

English
C2

Norwegian
B1