

Fernández Edreira **Diego**

BIOLOGIST · BIOINFORMATICIAN · DATA SCIENTIST

A Coruña, Spain

☎ 661-122-869 | ✉ diego.fedreira@udc.es | 📱 [DiegoFE94](#) | 🌐 [diego-fernandez-edreira](#) | 🐦 [@diego_edreira](#) | 🌐 [MyWeb](#)

Profile

Experienced bioinformatics scientist with 2+ years expertise in computational analysis of diverse biological data. Proficient in leveraging advanced algorithms and high-performance computing, adept at unraveling complex genomic and microbiomic landscapes. Adept in Machine learning and Artificial Intelligence studies related to biomedicine projects. Demonstrated success in developing and implementing cutting-edge methodologies to unravel intricate biological mechanisms.

Technical competencies

Languages	R, Bash, Python.
Version Control:	Git, GitHub.
High-throughput Data:	WGS, Amplicon 16S, RNA-Seq.
Containerization:	Conda, Snakemake, Singularity and Docker.
Methods & Concepts:	Sequence Assembly & Alignment (BowTie/Woltka/DADA2/Qiime2), Differential Gene expression (DESeq2, EdgeR), Differential abundance analysis (ANCOM, ALDEx2, LefSe, MaAsLin2, LinDA), Batch effect removal (ComBat, Limma, FAbatch, ConQuR, MMUPHin, P.norm), Dimensionality reduction (t-SNE, PCA, hierarchical clustering), Statistical Analysis (Pearson/Spearman correlation/Student t-test/Wilcoxon test, ANOVA, Kruskal-Wallis), Machine Learning Analysis (RF, SVM, glmnet, KNN, k-means, isolation forest...).
Web Languages	RShiny with R. Flask with python. Mother tongue Spanish and Galician (CELGA 4). Fluent English.

Professional experience

Bioinformatician at Universidade da Coruña

A Coruña, Spain

PRESENT

August 2024-Present

- I am working as a bioinformatics researcher in a european project called RePo-SUDOE (S1/1.1/P0033) at the University of A Coruña for the Centre for Research in Information and Communication Technologies (CITIC). I am currently working on the repositioning of drugs for the treatment of different types of cancer.

Bioinformatician at Universidade da Coruña

A Coruña, Spain

6 MONTHS

May 2023-October 2023

- During this time I was working as a bioinformatician at the University of A Coruña for the Centre for Research in Information and Communication Technologies (CITIC). During this period I was working on an application for the detection of polyps in colonoscopy using Deep Learning. As well as the integration of the models generated in web applications and mobile applications. Throughout the 6 months I was working with python for image processing and model training (opencv, tensorflow, keras, scikit-learn...). For the web development I used flask and for the Android application I used TensorFlow Lite and Dart.

Bioinformatician at Fundación Profesor Novoa Santos

A Coruña, Spain

12 MONTHS

March 2022-March 2023

- During these 12 months I was working as a bioinformatics researcher in a project called Practicum Direct (IN845D-2020/03), focused on analysis, validation and testing of ad hoc simulation models designed with open data and predictive models based on real data. I had several duties: review of the state of the art in terms of availability of open omics and clinical data, implementation of predictive models on real open data in R/Python and create dashboards with R and Shiny for the manipulation and presentation of results in an interactive way.

Bioinformatician at Fundación Profesor Novoa Santos

A Coruña, Spain

6 MONTHS

April 2021-October 2021

- During these 6 months I was working as a bioinformatics researcher in a colorectal cancer project. During this period I gained experience in metagenomic data processing, as well as, developing Machine Learning and Artificial Intelligence pipelines. Also I gained experience in the presentation and visualization of complex data.

Education

Ph.D. in Information and Communication Technologies

A Coruña. Spain

UNIVERSITY OF A CORUÑA

2021-Currently

- The proposal of this thesis is the development of a research based on different fields such as Artificial Intelligence, Medicine and Bioinformatics. In this research, based on Machine Learning algorithms, a new analysis methodology capable of integrating and extracting the maximum amount of information possible from multi-omics data related to different clinical conditions will be developed. This thesis is being conducted by making use of open access data made available to the research public by a multitude of projects and institutions.

Advanced course for the use of Supercomputer Centre

Santiago de Compostela. Spain

CESGA

2024

- This course focuses on teaching the organisation of the Finisterrae III Supercomputer. Course to understand how to use pipelines and environments for high performance computing. This course explains how to use efficiently in a high performance centre containerization methodologies: conda, docker, snakemake, etc.

Fundamentals of Deep Learning

A Coruña. Spain

NVIDIA

2022

- This workshop focuses on teaching the fundamental techniques and tools required to train a deep learning model, enhance datasets through data augmentation to improve models accuracy and leverage transfer learning between models to achieve efficient results with less data and computation. In summary, through this course I gained experience with common deep learning data types and model architectures.

IX International Workshop on Medical Imaging, Capture and Integration of Clinical Data

A Coruña. Spain

UNIVERSITY OF A CORUÑA - RNASA-IMEDIR

2021

- This workshop focuses on teaching the basics of applied medical imaging (creation of models for image segmentation, new technologies in radiological practice, deep learning for medical image classification, etc.). It also teaches methodologies for the correct capture of medical data (omic data, clinical data, etc.) in order to follow good practice.

Course for the use of Supercomputer Centre

Santiago de Compostela. Spain

CESGA

2020

- This course focuses on teaching the organisation of the Finisterrae II Supercomputer. It points out the resources available, the libraries and compilers necessary to command processes. It also explains in detail how to make efficient use of the queuing system available.

Bioinformatics for Health Sciences Master's degree

A Coruña. Spain

UNIVERSITY OF A CORUÑA

2018-2020

- Learning and reinforcement of the use of bioinformatic tools, image analysis, biostatistics, Machine Learning methodology and computational intelligence for high dimensional data. Thesis master directed by Dr. Carlos Fernández Lozano with the title "Machine learning based analysis of metagenomic profiles for the stratification of patients affected by Type I Diabetes" and developed in R and partially executed in High Performance Computers. This thesis obtained an honors mention and the final results have been published in the high impact JCR journal Expert Systems with Applications.

Biology degree

A Coruña. Spain

UNIVERSITY OF A CORUÑA

2012-2018

- Main interest in biochemistry, genetics and microbiology fields. Thesis degree directed by Dr. María Isabel González Siso with title "Isolation and characterization of clones with hydrolase activity from a metagenomic library of thermal water". Thesis on the bioprospection of new enzymes in metagenomic libraries with the aim of commercializing new lipases, through species isolation, lipolytic activity assays and High Throughput Sequencing (HTS) techniques.

Publications

2024	Fernández-Edreira, D., Liñares-Blanco, J., Patricia, V., & Fernandez-Lozano, C. (2024). VIBES: A consensus subtyping of the vaginal microbiota reveals novel classification criteria. In <i>Computational and Structural Biotechnology Journal</i> (Vol 23, p.148).
2024	GOLOB, Jonathan L., et al. (2024). Microbiome preterm birth DREAM challenge: Crowdsourcing machine learning approaches to advance preterm birth research. In <i>Cell Reports Medicine</i> (Vol 5, No.1, p.101350).
2021	Fernández-Edreira, D., Liñares-Blanco, J., & Fernandez-Lozano, C. (2021). Machine Learning analysis of the human infant gut microbiome identifies influential species in type 1 diabetes. In <i>Expert Systems with Applications</i> (Vol 185, p. 115648).
2021	Fernández-Edreira, D., Liñares-Blanco, J., & Fernández-Lozano, C. (2021). Machine Learning-based analysis of metagenomic profiles for the stratification of patients affected by type I Diabetes. In <i>Proceedings of the MOL2NET'21, Conference on Molecular, Biomedical & Computational Sciences and Engineering, 7th ed., 25 January 2021–30 January 2022, Multidisciplinary Digital Publishing Institute Proceedings.</i>
2021	Edreira, D. F., Blanco, J. L., Galdo, B. C., García, V. M. M., & Pazos, A. (2021). La Inteligencia Artificial como herramienta para la gestión y explotación de datos, informaciones y conocimientos biomédicos en entornos “Big Data” en la nube. In <i>I+ S: Revista de la Sociedad Española de Informática y Salud</i> (No. 143, p. 30-39)
2020	Fernández-Edreira, D., Liñares-Blanco, J., & Fernández-Lozano, C. (2020) Identification of Prevotella, Anaerotruncus and Eubacterium Genera by Machine Learning Analysis of Metagenomic Profiles for Stratification of Patients Affected by Type I Diabetes. In <i>Multidisciplinary Digital Publishing Institute Proceedings</i> (Vol. 54, No. 1, p. 50).

International Conferences

MOL2NET'21. Conference on Molecular, Biomedical & Computational Sciences and Engineering, 7th ed: AIMEDIC-08.

A Coruña, Spain

POSTER SPEAKER AND PAPER PUBLICATION

November 2021

- “Machine Learning-based analysis of metagenomic profiles for the stratification of patients affected by type I Diabetes”

III XoveTIC Congress

A Coruña, Spain

POSTER SPEAKER AND PAPER PUBLICATION

September 2020

- “Identification of Prevotella, Anaerotruncus and Eubacterium Genera by Machine Learning Analysis of Metagenomic Profiles for Stratification of Patients Affected by Type I Diabetes”

Cancer and microbiota: evidences

A Coruña, Spain

ASSISTANCE

October 2020

- Conference on the role of microbiota in human health. More specifically in the types of cancer that have more impact on society nowadays. Artificial intelligence as an effective method in the diagnosis and prognosis of some of these types of cancer was also discussed.

Microbiota: What's cooking?

A Coruña, Spain

ASSISTANCE

October 2019

- Pioneering multidisciplinary meeting point that serves as a focus of inspiration for research actions that generate new protocols of care action, including the creation of patents on diagnostic devices, prognosis, therapy, control and care monitoring.

Organisation of Activities

2023	Teacher of Introduction to Applied Artificial Intelligence with Python (2023) In <i>University of A Coruña, A Coruña. Spain. 9 to 30 January</i>
2021	Organising Committee of IX Workshop Internacional en Imagen Médica Captura e Integración de Datos Clínicos - Principios básicos de Inteligencia Artificial y computación avanzada en el ámbito Biomédico. In <i>University of A Coruña, A Coruña. Spain. 28 June to 8 July</i>