KATYNA **SADA DEL REAL**

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RESEARCH INTERESTS

Fields: Deep Learning, Explainable AI, High Performance Computing, Machine Learning
Topics: Cancer, Precision Medicine, Women's Healthcare

EDUCATION

2021 – Present | PhD in Artificial Intelligence for Cancer Research *TECNUN School of Engineering, University of Navarra*

2020 – 2021 | MSc in Biomedical Data Analytics *TECNUN School of Engineering, University of Navarra*

- *Machine learning, data science, image processing techniques, high-performance computing, bioinformatics, next-generation sequencing, operations management*

2016 – 2020 | BSE in Biomedical Engineering *TECNUN School of Engineering, University of Navarra*

AWARDS

2020 | Banco Santander Scholarship for MSc *San Sebastian, Spain*

2016 – 2020 | University of Navarra Full Tuition Scholarship *San Sebastian, Spain*

2020 | Winner of FORUN's "Next Generation Leaders" paper. *Pamplona, Spain*

- *Developed a strategic plan to strengthen the ethics of young leaders*

2018 | First prize B+INVAS. *San Sebastian, Spain*

- *Developed a blockchain-based medical records management system idea and won the opportunity to visit, with BIC Gipuzkoa, accelerators of innovative projects related to biosciences and cybersecurity in Tel Aviv.*

2016 | Prepa Tec's Medal for Integral Excellence *Monterrey, Mexico*

TECHNICAL SKILLS

Languages | Python (PyTorch, TensorFlow), R, Matlab, Java, SQL, HTML
OS | Linux (Ubuntu), macOS, Microsoft Windows
Cluster | SLURM, AWS
Software | CST Studio, Adobe Premiere Pro, iMovie

RESEARCH EXPERIENCE (TECNUN School of Engineering)

08/2021 – Present | Postgraduate Researcher

Unravelling Cancer Drugs Mechanism of Action with a Sparse Explainable Neural Network (publication in progress, first author)

- *Optimized a sparse neural network in PyTorch to predict drug response and made it interpretable using DeepLIFT.*

06/2022 – Present | Postgraduate Researcher

Precision Oncology: The Challenge of Interpretability (publication in progress)

- *Studied the interpretability of different machine learning models (R, PyTorch, Matlab).*

01/2022 – 08/2022 | Postgraduate Researcher

Collaboration in paper: Gimeno, et al. "Explainable Artificial Intelligence for Precision Medicine in Acute Myeloid Leukemia" (under review)

05/2021 – 08/2021 | Bioinformatics Intern

Drug Response Prediction Using a Sparse Visible Neural Network
Advisor: *Angel Rubio*

- *Developed sparse neural network in PyTorch for drug response prediction.*

01/2020 – 09/2020 **Computational Biology Intern**
Approaches for determining the biological relevance of in-silico computed genetic Minimal Cut Sets (gMCSs) in cancer.
Advisor: *Iñigo Apaolaza*
- *Statistically tested the relationship between synthetic lethal gene pairs and gMCSs (constraint-based modelling approach for the identification of metabolic drug targets) using R. Identified and studied relevant genes in both groups.*

05/2018 – 07/2018 **Biostatistics Intern**
Analysis of alternative splicing events in different tissues.
Advisor: *Juan A Ferrer-Bonsoms*
- *Adapted a code using parallelization techniques in R to analyse the effect of alternative splicing in different samples.*

TEACHING EXPERIENCE (TECNUN School of Engineering)

Present, Fall 2021 **Data Analytics Teaching Assistant**
Preparation of material, exams, and R code for the course. Invigilating tests. Office hours.

Spring 2022 **High Performance Computing Teaching Assistant**
Installed software in the DIPC Supercomputing Center cluster for student use.

Spring 2022 **Bioinformatics and Next Generation Sequencing Teaching Assistant**
Created virtual machines for each student. Prepared material, exams, and code for the course. Office hours.

Fall 2020 **Informatics Tutor**
Led weekly sessions for engineering students to learn programming concepts with Matlab.

Spring 2019, Spring 2020 **Biostatistics Tutor**
Led sessions for biomedical engineering students to learn programming concepts and biostatistics with R.

OTHER

09/2020 – Present **Gure-Enea Youth Association Management Committee**
Planning and evaluation of recreational activities for young people to foster their social commitment and values.

09/2021 – 07/2022 **Member of Think Tank "Youth for Climate" of the Provincial Council of Gipuzkoa**
Generated ideas for the government to implement actions and projects related to climate change in Gipuzkoa.

09/2019 – 09/2021 **Marketing Team TECNUN**
Conducted informative sessions, personal meetings and guided tours of university facilities to attract prospective engineering students.

2017 – 2020 **Dean and Secretary of Colegio Mayor Jaizkibel**
Managed college life through the coordination of multiple committees that promoted global education, academic growth, and personal and professional development.

2016 – 2020 **ASPACE Gipuzkoa**
Assisted people with cerebral palsy.

2017 – 2020 **Basketball Federation of Gipuzkoa (TECNUN team)**

CERTIFICATIONS

03/2022 **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization** ***DeepLearning.AI*** *(Online)*

10/2021 **Neural Networks and Deep Learning** ***DeepLearning.AI*** *(Online)*

06/2021 **Deep Neural Networks with PyTorch** ***IBM*** *(Online)*