

# MIREN LUR BARQUIN TORRE

## MACHINE LEARNING & COMPUTER VISION | MATHEMATICAL MODELLING AND COMPUTATION MSc | MATHEMATICS BSc

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Copenhagen, Denmark.

Mathematician and machine learning scientist deeply committed to steering my professional career towards the realm of [healthcare research](#), with a special enthusiasm for [medical image analysis](#).

My expertise in mathematics, alongside advanced skills in [machine learning](#), [3D image analysis](#), and [data science](#), equips me with a robust academic and technical background to join DRCMR. I am highly motivated to join the research center as a research assistant. This opportunity aligns with my commitment to excellence, passion for continuous learning, and a desire to thrive in a proactive, ambitious, and dynamic work environment.

My BSc studies equipped me with analytical, quantitative, critical, algorithmic, and mathematical thinking, along with a profound [meticulousness to delve into scientific documentation and effectively present and discuss results](#). Additionally, I developed a substantial understanding of the fundamentals of mathematical [programming](#) and [algorithm development](#). During my MSc studies, I further fortified my mathematical profile while delving deeper into advanced domains, including [machine learning](#), explainable AI, [image analysis](#), [computer vision](#), and [data processing](#).

I culminated my studies with a thesis on [Axon segmentation using 3D Convolutional Neural Networks](#), aligned with my professional career objectives.

## WORK EXPERIENCE

### Machine Learning Engineer

Hybrid Greentech, Nov. 2022 - Present

- Junior: Student Assistant (Nov. 22 - Jul. 23).
- Day-ahead electricity price forecasting: FCR-D (DK2). Probabilistic forecasting and baseline generation of EV capacities.
- Data retrieval, processing, and analysis (exposure to [AWS & EC2](#)).
- Time-series [ML forecasting model and algorithm research, development, and validation](#) in Python ([PyTorch & Scikit-learn](#)) and [deployment](#) of models ([Dagster](#), [Docker](#), [ClearML](#)).
- Energy Management Systems (EMS).

### Internal Model Validation

Kutxabank, Oct. 2020 - Jan. 2021

- Global Risk Control Department. Review and replication of financial risk models in different future scenarios, IFRS9.
- Report writing, result analysis, and conclude and present findings.

## EDUCATION

### Mathematical Modelling & Computation, MSc.

Technical University of Denmark, DTU, Feb. 2021 - July 2023

- Focus areas: [Machine Learning & Data Science](#)
- Thesis: [Axon segmentation using 3D Convolutional Neural Networks](#). ([PyTorch](#))

Explore and analyze the [3D microstructure of the brain](#) white matter by segmenting axons in [3D synchrotron X-Ray nano-holotomography](#) images using 3D [CNNs](#), aiming to overcome the current limitations of diffusion [MRI](#) methods for [measuring axon diameter](#).

[3D medical image](#) processing and analysis, utilization of [HPC](#), modification and adaptation of source code in Python libraries ([TorchIO & MONAI](#)). Experiment tracking ([Neptune.ai](#)).

- DL in Computer Vision, image analysis, DL ([CNNs](#), [R-CNNs](#), [RNNs](#), [GANs](#), [saliency maps](#), etc. for object [segmentation, detection & classification](#))

### Mathematics, BSc.

University of the Basque Country, UPV/EHU, Sept. 2015 - Mar. 2020

- Focus areas: [Pure Mathematics and Applied Mathematics, Statistics & Computer Science](#)
- Honours: Descriptive Statistics (2015-16)
- Final year dissertation: ['The assignment problem for Kidney Paired Donation'](#) (C++, R)

University of Primorska, Feb. 2019 - July 2019

ERASMUS+ programme (Koper, Slovenia)

## DIGITAL COMPETENCES

**Writing Mastery** LaTeX

**Programming Proficiency** Python (PyTorch)

**Others** HPC, ITK-SNAP, experiment tracking, Git, VS Code, AWS, MATLAB & R

## SKILLS

proactivity - independence - engagement - research - problem-solving - decision making - positivity - adaptive & critical thinking - teamwork - consistency - adaptability - empathy - communication - creativity - independent learning - collaboration - time management

## LANGUAGES

- **Spanish** Native
- **Basque** Bilingual competence
- **English** C1 Level CAE
- **German** A2 Level CEFR
- **Danish** DU3 module 2