Thomas González Saito

Data Science + Biomedical Engineering Student

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ABOUT ME

I am currently pursuing a double degree in Data Science and Biomedical Engineering at UPC. My interests lie in developing new Machine Learning methods for biology and healthcare, combining technical and biomedical expertise to drive impactful research.

EDUCATION

BSc in Data Science and Engineering   *2021–2026*
Universitat Politècnica de Catalunya (UPC) - CFIS

I am pursuing a degree in Data Science and Engineering with an average grade of 9.27/10. This program equips me with a strong foundation in data-driven problem-solving through courses such as Information Theory, Data Analysis, Mathematical Optimization, Statistics and Probability, Machine Learning and Deep Learning. These subjects provide both theoretical and practical expertise in handling, analyzing, and deriving insights from complex datasets, with applications across diverse domains.

BSc in Biomedical Engineering   *2021–2026*
Universitat Politècnica de Catalunya (UPC) - CFIS

In parallel, I am completing a degree in Biomedical Engineering with an average grade of 9.32/10. This program focuses on applying engineering principles to healthcare and biology, with particular emphasis on Biomedical Signal Processing and Biomechanical Computer Simulation. It also provides a solid background in biology and physiology, allowing me to understand and address challenges in medical technology and healthcare innovation.

Both degrees are supervised by CFIS, a highly selective program at UPC that allows students to pursue rigorous interdisciplinary studies in mathematics, physics, and engineering.

RESEARCH EXPERIENCE

Visiting Student   *July 2025 – (currently active)*
Massachusetts Institute of Technology, Cambridge, USA

Doing research in Uhler Lab (carolineuhler.com). Working on Statistical Optimal Transport for genetic data. Collaborating remotely from Barcelona from July 2025. Incoming in-person visiting student from February to September 2026.

ML Engineering Intern   *July 2024 – September 2024*
Esperanto Technologies, Mountain View, USA

After a successful internship in the Barcelona office, I have been invited to do an internship at the headquarters of the company in Silicon Valley. Mainly doing research on ways to compress the KV Cache of Large Language Models, using both quantization and eviction based approaches, to improve efficiency during inference.

ML Engineering Intern   *July 2023 – August 2023*
Esperanto Technologies, Barcelona, Spain

Esperanto Technologies is a tech startup which has its headquarters located in Mountain View (California), focused on energy efficient hardware, HPC and AI. I worked on implementing diffusion models in their pipeline, gaining deep insight on how these models work from an algorithmic and theoretical standpoint. My work was integrated as a core element in the software stack of the company.

Research intern   *July 2022 – August 2022*
Center for Research of Biomedical Engineering (CREB, currently IRIS), Barcelona, Spain

Did research on applications of Deep Learning for Survival Analysis problems, focused on a specific clinical case. I familiarized myself with different neural network architectures like Transformers and RNNs, as well as some concepts in Survival Analysis like Kaplan Meier Curves or Cox Proportional Hazards Models. This work has resulted in a paper submitted to the Chest journal (Q1).

PUBLICATIONS

E. Manzini, **T. González Saito**, J. Escudero, A. Génova, C. Caso, T. Pérez-Porcuna, A. Perera-Lluna, "Deep survival analysis for longitudinal EHR data for joint prediction of hospitalization and death in COPD patients", *Submitted to Chest (JCR IF 9.2, Q1)*, 2025. [arXiv:2511.05960]

TEACHING EXPERIENCE

Teaching Assistant   *February 2024 - June 2024*
Universitat Poltècnica de Catalunya (UPC)
Provided assistance on the Mathematical Optimization subject of the degree in Data Science and Engineering.

PERSONAL PROJECTS

HackUPC 2024: Intersystems challenge
In this hackathon, my team and I worked on an LLM RAG application which, given a text prompt, allows you to create a videoclip using your own gallery images with an AI generated instrumental background music. We were one of the winning teams in this challenge. Details: link to devpost

Datathon FME 2022: Accenture Challenge
In this hackathon, my team and I worked on a classification model in order to predict the delays in a delivery chain. My main roles there were first cleaning and extracting the raw data using mainly the python pandas library and fitting a logistic regression model and a transformer-based Deep Learning Model as predictive models. Details: link to repository

"Deep Learning in Medical Imaging" (2020–2021)
As a part of my high school final thesis I developed a chest X-ray image classifier using convolutional neural networks. I gained in-depth knowledge about the mathematical concepts, structure, working and optimization of convolutional neural networks, as well as experience using python and advanced techniques such as transfer-learning. The work was awarded with an Honorific Mention in the Awards to Research Projects in Applied Engineering and Mathematics of the Pompeu Fabra University (UPF). Full Report Link.

VOLUNTARY WORK

Vice president of the Ecologic Association of the East School of Engineering of Barcelona (EcoEEBE), at UPC   *(2023-2024)*
Coordinated preparations for actions, including outings in nature and cultural activities, to promote the awareness about environmental issues.

Student mentor at the Spanish and Iberoamerican Biology Olympics (2023)
During the period of these competitions I accompanied and gave support to the students, organizing activities and helping them with any problem they encountered during their stay in Barcelona (for the Spanish phase) and Madrid (Iberoamerican phase).

Nabój junior organizer (2022)
I helped with the translation of the problems of this european level competition about math and physics.

ACHIEVEMENTS AND AWARDS

- Iberoamerican Biology Olympics: Silver medal
- Spanish Biology Olympics: Silver medal
- Catalan Biology Olympics: Gold Medal
- Catalan Chemistry Olympics: 11th position
- Awards to Research Projects in Applied Engineering and Mathematics UPF: Honorific Mention
- HackUPC 2024 Intersystems challenge: 3rd place
- Karate black belt, Catalan Karate Federation

Languages & Programming

Languages

- **Japanese:** Mother tongue (N1)
- **Spanish:** Mother tongue
- **Catalan:** Mother tongue
- **English:** Advanced level (C1)
- **French:** Beginner level (A2)

Programming languages

- **C++:** Advanced level
- **Python:** Advanced level
- **R:** Intermediate level
- **SQL:** Intermediate level
- **MatLab:** Intermediate level