Oriol Bustos Martínez

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Professional experience

Micelab *06/2023 – Present*

Data Scientist *04/2024 – Present*

- **Developed data-driven digital twins for blood glucose simulation**, creating Generative Deep Learning models that integrate insulin, carbohydrate intake, and exercise information.
- Built an internal Python framework for Digital Twin development leading to 4 published papers and securing €150k in project funding.
- Optimized Tensorflow training loops, achieving a 65% speedup, implemented continual training monitoring with MLflow, acceptance and unit testing, automation for hyperparameter tuning and results visualization in a JavaScript dashboard.
- Planned, authored, and revised research projects: authored and co-authored top-level journal publications and presented at international conferences in collaboration with multicultural research teams and partner universities.
- Onboarded and supervised 2 PhD candidates, 1 MSc student, and 1 BSc intern, guiding their work on GAN implementations.

Internship *06/2023 – 03/2024*

- Worked in the European project *"Prometeus"*: gathered technical requirements, created the *Nutritional Clinical Advisor* for **nutrient infusion to optimize brain oxygenation** in the Neonatal Intensive Care Unit and presented results to evaluating committee.

Education

Master in Data Science | University of Girona *09/2024 – 06/2025*

Grade: 8.2/10 - Honours in the Final Master Thesis

Bachelor in Biomedical Engineering | University of Barcelona *09/2020 – 06/2024*

Grade 8.33/10 - Honours in Multivariate Calculus and Linear Algebra.

Exchange Student | University of Twente, Netherlands *09/2022 – 02/2023*

Coursework: Machine Learning, Signals & Actuators, Signal Processing, Biomedical Materials, Telemedicine

Languages & Tech Stack

- English (Fluent, **C2 Cambridge Certificate**), Spanish (Native), Catalan (Native), German (Basic)
- **Python | SQL | R | MATLAB | TensorFlow | git | MLflow | Docker |**

Papers

- **Bustos O**, Mujahid O, Beneyto A, Contreras I, Vehí J. *"Inlcuding Exercise Into Data-Based Virtual Twins For Glycemic Simulation"* accepted in the Journal of Diabetes Science and Technology (Q1 journal, accepted, pending publication)
- Pellizari E, Mujahid O, Prendin F, **Bustos O**, Cappon G, Facchinetti A, Vehí J. *"Enhancing the Physiological Plausibility of GAN-Generated Blood Glucose in Type 1 Diabetes with Monotonicity Constraints"* (paper under review for the 2025 IEEE International Conference on Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering)
- **Bustos O**, Soler J, Mujahid O, Vehí J. *"Predictive Modeling of Exercise-Induced Glycemic Outcomes Using Generative Deep Learning" (presented in DT; 2024 - complete **abstract** inside link)*

Others

- Online news media article on digital twins: *newmedicaleconomics.es/los-gemelos-digitales-y-su-impacto-en-la-practica-clinica/*
- Internship in the Clinical Hospital Center Rijeka, Croatia (August 2022)
- Selected for participation in one of ESADE's major competitions, the IdeaUp Challenge 2022, a 6-month program where teams develop business ideas from scratch.
- Science and Technology Baccalaureate with a grade of **9.5/10** and **13.1/14** on the University Access Exams (PAU).
- Designed webapps on interactive data visualization: Growth, Gases & Geopolitics, t-distributed Stochastic Neighbor Embedding on blood glucose