Jack Benarroch Jedlicki

Education

2025–2029 **Harvard University**, *PhD in Computer Science*, Cambridge, United States
- Funded by the "La Caixa" Foundation Fellowship and the Harvard SEAS Prize Fellowship.
- Research interests: machine learning, generative world models, robotics.

2022–2023 **UC Berkeley**, *Visiting Student*, Berkeley, United States
- Fully funded year as a visiting student. GPA: 4.00/4.00.

2019–2024 **University of Barcelona**, *2 BScs: Mathematics and Physics*, Barcelona, Spain
- Ranked among the top 2 in the cohort. GPA: 9.5/10. Highest Honors in 45 courses.
- Most selective undergraduate program in Spain's top-ranked university, admitting only 20 students annually.

Awards

2025 **Harvard SEAS Prize Fellowship**, Full funding for 2 years of the PhD.

2024 **"La Caixa" Foundation Fellowship**, Most prestigious graduate scholarship in Spain, awarded annually to 35 exceptional STEM students from Spain and Portugal. Provides full funding for 2 years of graduate studies.

2024 **Honors Prizes**, Over $2,000 in cumulative prizes for achieving Highest Honors across 25+ courses at the University of Barcelona.

2023 **Elena Maseras Research Fellowship**, Awarded annually to 8 top students in Spain for conducting an AI-focused research project at the Computer Vision Center of Barcelona ($3,600).

2022 **UB-UCEAP Scholarship**, Awarded to 5 top students among 63,000 students at the University of Barcelona to fund a year of study at UC Berkeley.

Experience

2024–2025 **Nostrum Biodiscovery – AI Department**, *Engineering Intern*, Barcelona, Spain

Research and implementation of deep learning algorithms for RNA structure prediction leveraging new RNA language models.

2024 **Barcelona Supercomputing Center**, *Research Intern*, Barcelona, Spain
- Tensor networks research applied to data compression and efficient physics simulators inspired by quantum algorithms. Advised by Dr. Bruno Julia-Diaz and Dr. Artur Garcia Saez.
- Developed library for implementation of quantum-inspired simulators (quantumsim) and presented work in Physics Bachelor's Thesis (ranked among the top 3 theses).

2023–2024 **Computer Vision Center**, *Research Intern*, Barcelona, Spain
- Research in topological regularization, applied to generative models. Advised by Dr. Sergio Escalera and Dr. Carles Casacuberta.
- Proved new results enabling new ways of introducing point cloud shape information into differentiable loss functions using topology. Developed library for efficient implementation of topological regularizers (topogen); work presented in Mathematics Bachelor's Thesis (top ranked thesis); awarded the Elena Maseras Research Fellowship; preparing a publication.

2023 **UC Berkeley, Alaa Lab**, *Research Intern*, Berkeley, United States
Research on the generation of digital twins of the cardiovascular system using computer vision and physics-informed neural networks. Advised by Prof. Ahmed Alaa. Paper published at NeurIPS 2024 (co-first author).

2022 **Massachusetts Institute of Technology, Auto-ID Lab**, *Research Intern*, Cambridge, United States
Research sponsored by Takeda Pharmaceuticals to improve the detection of small metal particles in vaccines and advance the comprehension of the current landscape of metal detection. Advised by Prof. Brian Subirana. Paper published in the IEEE Sensors Journal 2023 (first author).

Publications & Presentations

[4] **J. B. Jedlicki**, "TopoGEN: Topology-Informed Generative Models", *Mathematics Bachelor's Thesis*, 2024.

[3] **J. B. Jedlicki**, "Tensor Networks for Quantum-Inspired Simulations", *Physics Bachelor's Thesis*, 2024.

[2] K. Kuang*, F. Dean*, **J. B. Jedlicki***, D. Ouyang, A. Philippakis, D. Sontag, A. Alaa, "Med-Real2Sim: Non-Invasive Medical Digital Twins using Physics-Informed Self-Supervised Learning", *NeurIPS* 2024. (*: joint first author.)

[1] **J. B. Jedlicki**, D. Tellbach and B. Subirana, "Metal Particle Detection Methods and Their Use for Freeze-Dried Vaccine Inspection: A Review", *IEEE Sensors Journal* 2022.

Talk **J. B. Jedlicki**, "Topology-Informed Generative Models", *Presentation at the Computer Vision Center Talent Day Workshop*, 2024.

Additional

Languages: Spanish (native), French (native), Catalan (native), English (fluent; IELTS: 8.0).

Private tutor of Mathematics, Physics, and French (2019–2022).

Handball Player at the LFB Handball team (2012–2018). Team captain (2015–2018); player in Catalonia's first league (2017–2018); player in the Catalonia National Selection Team (2017–2018).