Gabriel Alonso Bustamante

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Education

MSc Nanotechnology Engineering
Sapienza University of Rome · Sep 2026 – present
- Focused on semiconductor devices, from atomistic simulation, nanomaterials and laser manufacturing to device physics, chip fabrication and optoelectronics.

BSc Applied Computer Science and Artificial Intelligence
Sapienza University of Rome · 2026 · 110/110 cum laude
- Thesis: *Edits, Deletions, and Restrictions: Making Telegram's Content Dynamics Observable at Scale*
- Honors programme: one of 7 students selected; online content moderation

BUCA'23 Summer School on Billion-User Cloud Applications · Sep 2023
- Five-day school taught by Google Search Infrastructure engineers, including the creator of Megastore: replication, load balancing, scheduling, durability, performance analysis.

FA'23 Il Futuro Annunciato, invitation-only computer science meeting for undergraduates · Jul 2023

Projects

Strascico: Longitudinal Telegram Corpus (BSc thesis) · Python, asyncio, PostgreSQL, Docker
- Built a crawler that revisits Telegram channels over months: >500M messages from 12k channels, with 2.4M deletions and 36k edits tracked.

artlapse · OpenCV, WebGPU, TypeScript
- Turns a painting-stream recording into a timelapse: finds the moving canvas in every frame with SIFT and rebuilds it as one steady picture, in the browser on the GPU.

Spar buoy simulator · NumPy, SciPy, JavaScript
- Physics model and design search for a camera buoy on a lake: heave, tilt and sway in waves, validated against analytic cases and ported to an interactive web simulator.
- Built a parametric browser CAD tool and modelled its four 3D-printed parts in it: o-ring-sealed pipe adapter and coupler, foam stop and a carriage for the mast screw.

Button Pusher & Millefoglie · Three.js
- Browser geometry tools: a parametric clip modelled as a signed distance field, and an STL-to-paper slicer with polygon nesting.

windwatch · FastAPI, SQLite
- Self-hosted wind service for Lake Bracciano: collects a station, 14 forecast models and two webcams, scores each forecast against the station, sends Telegram alerts.
- Corrects each model against the station by lead time and hour of day, then blends them weighted by each one's error over the last 30 days.

Interactive course books (MSc courses) · KaTeX, Cloudflare Pages
- Wrote five public bilingual textbooks with interactive figures for first-semester courses: chemistry, quantum mechanics, materials, continuum mechanics, laser processing.

Awards

CyberChallenge.IT · 2022
- Selected as one of 20 of 505 applicants for Italy's national cybersecurity training programme.
- Attended lectures and solved CTF challenges in cryptography, reverse engineering, web security and binary exploitation.

Skills

Programming languages Python, Go, TypeScript, C, C++, Java, SQL, RISC-V Assembly
ML / NLP PyTorch, scikit-learn, Hugging Face Transformers, text embeddings, topic modelling, speech recognition, LLM APIs, CUDA
Data & infrastructure pandas, NumPy, PostgreSQL, SQLite, Docker Compose, asyncio, Git, Linux
Web Flask, Vue, Three.js, OpenAPI

Languages

Italian (native) · **English** (C2, Cambridge) · **Spanish** (professional)