Juan Belza Garcia

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Education

University of California, Berkeley — Berkeley, CA
Bachelor of Arts in Computer Science and Mathematics — *May 2028*
Poker@Berkeley Board, Berkeley International Collegiate Programming Team
Berkeley Deep Learning Reading Group; Mechanistic Interpretability Reading Group; Berkeley Probability Seminar

Honors

IMO TST · USAMO Qualifier · AIME 1st Place in Taiwan · AMC Distinction — Feb. 2023
USACO Platinum · Codeforces 2000+ — Dec. 2023
Atlas Fellow ($10k scholarship; 0.7% acceptance; $1M fund access) — Jun. 2023
European Summer Program on Rationality (hosted at Oxford University; <2% acceptance) — Aug. 2023
Purple Comet Math Meet · 2× 1st Place (Taiwan) · WMC Winner — 2022–23

Experience

Incoming Quantitative Researcher — Summer 2026
Xantium Group

IMC Prosperity Challenge — Apr. 2025
Global Trading Competition
- Built multi-product trading bots using Black–Scholes, Kalman forecasting, VWAP baskets, and spread mean-reversion across 12+ instruments; top-10 global placements.

Poker/Math Teaching — Aug. 2023 – Present
Contract / AMC Academy / TAS Math Team
- Coaching high-stakes regs in HU SNG/HU cash + ring via custom ante sims, squid sims, and nodelocking.
- AMC Academy instructor (AMC/AIME + USACO); former TAS captain: lectures, contests/POTWs, and WMC /COMAP/HMMT coaching.

Software Engineer — Jul. 2023 – Aug. 2023
Bulgarian National Bank — *Sofia, Bulgaria*
- Built Python pipeline for real-time housing-market analytics, deployed as an internal monitoring engine.
- Applied multivariate time-series models and spatial econometrics for affordability indices and price clustering.

Mathematics Researcher — Jul. 2023 – Aug. 2023
Bulgarian Academy of Sciences — *Varna, Bulgaria*
- Studied Football Pool Problem; sphere covering/packing methods in α-ary (q-ary) Hamming spaces (research note).

Projects

Trading Bot (Polymarket / Kalshi) — Present
- Built and deployed a live trading system that scrapes sportsbook odds and cross-market prices to compute fair price, execute hedged arbitrage, and learn position sizing via online RL/bandits. Bot is deployed and improving.

Machine Learning (Independent Research / Writing) site — 2025 – 2026
- Implemented a GPT-2-style transformer LM in PyTorch with causal MHA and top-k/temperature sampling.
- Trained VAEs and DCGANs on CelebA-64; implemented reparameterization and transposed-conv decoders.
- Derived diffusion objectives (ELBO; noise prediction vs score matching) and implemented train/sampling loops.
- Built an autodiff engine (graph + topo backprop + unbroadcasting); validated via an MNIST MLP.

Predictive Modeling for Lung-Cancer Progression — 2024
National Taiwan University — *Taipei, Taiwan*
- Under PhD student Moritz Sontheimer. 70% accuracy predicting progression using ensemble ML techniques.

Fluid Simulation (2D Incompressible Navier–Stokes) — 2025
Independent Project
- Built a stable 2D fluid solver (semi-Lagrangian advection + pressure projection) with real-time visualization.

Technical Skills

Languages: Python, C++, Java
ML/Scientific: PyTorch, NumPy, SciPy, Pandas, Matplotlib, statsmodels, scikit-learn
Tooling: Weights & Biases (W&B), Jupyter, Git, Linux
Quantitative: Time Series, Statistical Modeling, Stochastic Processes, Applied Econometrics