Baz Cosmopoulos

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Education

University of Michigan Ann Arbor, MI
B.S. Financial Mathematics & Data Science — Minor in Computer Science *Expected May 2027*

Awards & Honors

IMC Prosperity Trading Challenge — 41/12,626 (Top 0.33%).

Michigan Quant Conference — 2nd Place (Market Making; sponsored by IMC Trading and Old Mission).

Experience

SCALP Trade Chicago, IL
Incoming Quantitative Trading Intern *Summer 2026*

Michigan Finance & Mathematics Society (MFAMS) Ann Arbor, MI
VP External; Quant Sports Betting Team Lead *Jan 2025 – Present*

- Led a seven-person team that built an NCAA point-spread trading system with a 9.75% out-of-sample ROI across 15,276 bets, using half-Kelly sizing and a 4% edge threshold.
- Designed a leakage-safe walk-forward training loop from 2007 to 2022 with 30-day refits and time-series cross-validation, achieving a Sharpe ratio of 2.96 with a 4.32-unit maximum drawdown and a mean closing line value of +0.213 points.
- Trained an Optuna-tuned XGBoost model with Boruta-SHAP feature selection over 95 features, and improved ROI by 8.02 percentage points by incorporating market-signal features.

DemandEngine — demand-engine.net Remote
Founder and Solo Full-Stack Engineer *Jan 2025 – Present*

- Built a full-stack SaaS that ingests more than 5,000 posts per day and generates 1,000 to 2,000 structured ideas daily through an automated LLM workflow.
- Deployed a React frontend on Vercel and a Django and FastAPI backend on Cloud Run with PostgreSQL, including CI/CD, authentication, billing, and monitoring.

Rocket Lab Long Beach, CA
Structural Analysis Intern *Sep 2024 – Nov 2024*

- Cut NASTRAN modal and loads runtime by more than 95% by replacing a 60,000-element composite tank model with a roughly 30-element reduced-order model built from rigid and stiffness elements.
- Validated the reduced model by matching six rigid-body modes and six-axis static and bolt-load responses within 5%, and delivered thermal stress analysis for joint overstress risk under sun-facing hot and anti-sun cold gradients.

Projects

Deep RL Options Hedging (Recurrent PPO) — GitHub Jan 2025 – Present

- Built a recurrent PPO agent for options hedging of a 10,000-share SPY position using at-the-money calls and puts, trained on 100,000 rough Bergomi Monte Carlo paths with a cost-aware reward.
- Backtested against a daily delta–gamma neutral baseline with $0.65 per-contract commissions and slippage on 2008 to 2023 SPY options data, reporting transaction costs that fell from $2.09M to $83K and a maximum drawdown that improved from 1.33% to 0.85%.

Hybrid Monte Carlo American Options Pricer — GitHub Nov 2024 – Dec 2024

- Built a modular C++ American options pricer under rough Bergomi volatility that combines Longstaff–Schwartz, branching bounds, martingale dual optimization, and asymptotic methods.
- Implemented FFT-based fractional Gaussian noise and OpenMP parallelism, achieving about 83k paths per second and a 6.3x speedup on eight cores in repository benchmarks.

Technical Skills

Math/Trading: Probability, Stochastic Processes, Time Series, Optimization, Risk (Drawdown and Position Sizing)
Programming: Python (NumPy/pandas), C++, SQL, Git, Linux
Tooling: PyTorch, XGBoost, Backtesting (walk-forward and out-of-sample), Monte Carlo, Greeks and Volatility (rough Bergomi), OpenMP