

Andre Heid Rocha da Costa

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EDUCATION

Yale University | B.A in Economics; B.S in Astrophysics

New Haven, CT | Class of 2029

Yale College Coursework: Multivariable Calculus, US-Mexico Economic & Border Policy, Electronics, Micro/Macroeconomics, Financial Economics, National Security & Foreign Policy, Probability & Statistics, Cosmology

EXPERIENCES

Itaú BBA | Summer Quantitative Research Analyst (Global Markets & Treasury)

May 2026 – Aug 2026 | São Paulo, Brazil

- Built news-conditioned volatility regime engine: fine-tuned ModernBERT classifier resolving articles to instrument-level signals, feeding FFNN+VAE latent space clustered by k-means over a marginal-Wasserstein embedding with automatic regime-count selection across commodities and EM FX
- Layered per-regime volatility forecasts and transition matrices into scenario fans for IV–RV collapse detection in commodity trade timing and EM-FX pricing context (NDFs, FX swaps); presented to quant research directors and head of macro, now extending to Itaú's banking division

The Forest Dialogue – Yale | Program Associate

Aug 2025 – Present | New Haven, CT

- Implemented AI-Leveraged automation algorithm for international conference logistics and planning with 300+ invites sent out
- Organized logistics and for dialogue between Brazilian and US corporate partners, organized conference with 50 participants

4th Annual Intl. Locked-In Syndrome Conference | Guest Speaker

June 2025 | Remote

- Presented 24-page publication on Locked-in Syndrome technology, one of 8 speakers at global symposium with 40+ researchers

Federal University of Rio de Janeiro (UFRJ) | Research Project Lead

Jan 2024 – Nov 2024 | Rio de Janeiro, Brazil

- Guided research efforts to develop and extend accessibility of advanced Brain-Computer interface (BCI) for individuals with full-motor paralysis by decreasing costs by ~13x standard market rates, optimizing efficiency & processing using python algorithm
- Research endorsed by expert at ETH Zurich (1st ranked engineering school in Europe), led to publication and pending patent via WIPO

INSPIRE Institute | Outreach Director

Oct 2023 – June 2024 | Abu Dhabi, UAE

- Expanded research opportunities; Directed outreach efforts to expand opportunities for aspiring young researchers in disadvantaged backgrounds. Extended programs to 5+ countries with a selected ~13 student cohort; 600+ collective downloads in high-impact publications

PROJECTS

Automated High-Volume Options Pricing Analysis Model | Python, Java

Feb 2026

- Built a systematic short-vol model that identifies option strikes quoted rich against the ticker's own surface history (filtered SVI), selling the reversion through a series of risk gates. Measured PnL through a skew-aware probability of profit model and tail loss caps to reduce risk exposure in options trades

Live Roll-Aware Commodity Futures Trading Model | Python

April 2026

- Leveraged distortions in historical pricing during calendar/contract roll events, using news data and intensity
- Fused vol-normalized momentum, carry from roll-jump calendar spreads and Hawkes self-exciting news intensity to train ML model for forward contract forecasts (pool of 26 tickers, mainly agro commodities and FX)

EOG Signal Conditioning and Front-End Design For Motor-Impaired Users | Python, Signal Processing

Nov 2024

- Developed a front-end for EOG circuits, proving viability for more accessible assistive communication
- Analyzed theoretical vs. hands-on performance across gain and noise-floor trade-offs, recommending filter-stage configurations
- Devised a validation strategy to streamline iterative refinement of the front-end architecture for clinical usability

SlotBank – Hardware-Enabled Management of Heavy Local LLM Models | Python, Metal, MLX

Jan 2024

- Built **slotbank**, a unified-memory MLX runtime that serves a 19.0 GiB 35B MoE at **6.1 tok/s with ~3.8 GiB wired vs. 0.005 tok/s stock MLX**, while running dense 27B at **9.95–13.47 tok/s** by coordinating Metal residency, macOS page cache, SSD expert streaming, and hybrid-state inference

ACTIVITIES

Yale Undergraduate Consulting Group (YUCG) | Analyst, YUCG Analytics

Aug 2025 – Present | New Haven, CT

- YUCG Analyst for a major consumer-accessories company; streamlined backend logistics by reducing production-time drag, improving bin-allocation efficiency, and shortening hand-to-market lead times
- Delivered integrated cost-reduction and operations insight that led to complete website redesign with data-driven improvements
- Member of YUCG Analytics group, constructing quantitative investment model for club portfolio, built mass-trained LLM model on club resources running locally for internal training and client outreach through email sentiment analysis, active recommendations in campaign design

SKILLS

Technical: Python (Numpy, Pandas, SciPy), C++, C, SQL, Fusion 360, Excel, PowerPoint, HTML, Java

Papers: [Digital Electrooculography Circuits to Facilitate Digital Communication](#), [Slotbank – Local LLM Model Inference Optimization](#)

Language: English (Native), Portuguese (Native), Spanish (Fluent), German (Basic)

Interests: Backpacking, Swimming, South American history, American & European Economic History, International Relations, Rocketry (Model Rockets)