

Eren Ege Çelik

İzmir, Turkey (UTC+3) · erenege3500@gmail.com · erenege.com · github.com/ErenEgeCelik

Independent quantitative researcher and prediction-markets trader. I formalize market mechanics as finite-state decision problems, derive expected value from observable transitions, and test policies with placebos, chronological out-of-sample evaluation and clustered uncertainty. Built Bayesian fair-value, latency-aware CLOB execution and microstructure research systems; traded small self-funded capital on Polymarket since 2026.

PREDICTION MARKETS

Independent Quantitative Researcher and Trader | *Self funded, remote*

2026 - present

- Built and operated a 24/7 research and execution stack with small self-funded capital, spanning probabilistic fair value, event-driven triggers, CLOB execution, replay, and live/paper verification.

Weather fair value | *Bayesian state space, Monte Carlo, calibration*

- Built a fair-value engine for daily-temperature markets across ~28 cities: scalar Kalman posterior over true airport temperature, Monte Carlo daily-max distribution, and a production-checked consistency identity linking current, next-observation and conditional outcome distributions.
- Rebuilt the leakage-aware calibration pipeline; in offline replay, reduced mean Brier score 24.2% versus the prior model configuration across 28 market fits, with no fit regressing.

Latency-aware execution and model retirement | *Pre-signing, caching, replay*

- Built a pre-signed EIP-712 order path with warm CLOB sessions, cached market state, keep-alive and multi-VPS routing; cut measured trigger-to-order latency from 10.2 s to ~58 ms and measured one national feed 4 min 44 s ahead of the reference source.
- Defined state, actions, transitions and reward explicitly; compared hold-to-resolution and exit-at-next-event policies under mean-variance utility and liquidity-aware exit assumptions.
- Retired the weather strategy after an out-of-sample replay over 3.3 GB, 50 city-days and 32 settlement events found -\$0.58 expected value per \$1 across every entry band; the median repricing window had compressed from 23 s to 0.15 s.

BTC 5-minute market microstructure | *Brownian-probit, verifier-first research*

- Reverse-engineered the dominant maker's Brownian-probit quote schedule: ~0.92 median within-slot R2 and ~6-tick chronological out-of-sample quote RMSE. Market prices calibrated outcomes better, so the model was treated as structural replication, not alpha.
- Defined an MDP-style state/action/transition tree and tested policies with placebos, chronological out-of-sample splits, slot-cluster bootstrap and feed-dropout cleaning. Fresh OOS rejected the static maker front: -0.98 cents per eligible quote moment (90% CI [-1.63, -0.36]).
- Measured simulation coverage directly: the same six crash slots replayed +\$21 while the contemporaneous paper arm lost \$31. Positive tape results were treated as upper bounds and live-probe targets, never deployment evidence.

World Cup cross-market relative value | *Conditional goal model*

- Built a conditional goal-arrival model and precomputed trigger table; verified it against full simulation (maximum divergence 0.0028) and live prices (within 0.02) before sizing small real-money positions.

OTHER EXPERIENCE

Undergraduate Research Assistant, volunteer, Prof. Ali Bozbey's group, TOBB ETÜ, Ankara. Superconducting hardware.

Summer 2025

Engineering Intern, Ingenieurbüro Bickele & Bühler, Stuttgart. SMD assembly, optical inspection, QC.

Nov 2023

EDUCATION

Middle East Technical University (ODTÜ), Ankara — BSc Physics.

2025 - Jun 2028

İzmir Institute of Technology (İYTE) — BSc Physics, GPA 3.6/4.0. Transferred to ODTÜ.

2024 - 2025

İzmir Atatürk High School — entered by national examination, top 0.7% nationally.

2020 - 2024

Kadir Has University, summer school — Augmented Mechanics, Augmented Electricity and Magnetism.

Summer 2023

AWARDS AND ACTIVITIES

Physics Olympiad team, İzmir Atatürk High School. İzmir Mathematics Olympiad regional team, grades 8 and 9. Organising staff, ICSM and ICSQMT international conferences, 2025 and 2026.

TECHNICAL

Programming: Python (NumPy, pandas, asyncio, matplotlib), Linux, Git, Playwright, C# (2023)

Methods: Bayesian state-space models, MDPs, Monte Carlo, ordered probit, Brier calibration, chronological OOS, placebo tests, clustered bootstrap

Markets: CLOB mechanics, order book microstructure, Polymarket, Polygon and USDC execution, EIP-712 order signing, WebSocket and REST feeds

Infrastructure: AWS, multi region deployment, VPS, Tailscale mesh

INTERESTS

Football: Göztepe academy U14-U15; school team captain, middle school and high school. Competitive Valorant: Immortal, team tournaments. Chess.