# Benjamin Knaster

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## EDUCATION

**University of Chicago**, College of Arts and Sciences — Chicago, IL — Expected May 2029
Intended Major: Mathematics and Philosophy (Dual Major)
GPA: 3.70 / 4.00
Activities: Chess Club; Philosophy Review; Jiu Jitsu and Grappling Club

**Columbia Grammar and Preparatory School** — New York, NY — May 2025
High School Diploma

## PROFESSIONAL EXPERIENCE

**Penumbra Investment Group** — New York, NY — Jun 2026 – Aug 2026
*Quantitative Research Intern*

- Designed and implemented an original systematic equities strategy under the supervision of volatility and systematic equities traders; strategy selected for firm deployment.
- Validated the strategy across a 2021–2026 out-of-sample backtest incorporating modeled market impact and volume constraints, achieving a 2.78 gross and 1.80 net Sharpe ratio.
- Identified and resolved defects in internal research libraries and authored technical documentation for the research team.

**Eisler Capital** — New York, NY — Jun 2024 – Aug 2024
*Quantitative Trading Intern*

- Analyzed seasonal patterns, macro-driven volatility, and pricing dynamics across agricultural and equity index futures; built exploratory Monte Carlo simulations in Python for scenario and risk analysis.
- Helped translate discretionary trade ideas into structured Python and Excel tools, and supported a senior quantitative researcher's background research on macro and fundamental drivers.

## LEADERSHIP AND ACTIVITIES

**Observable Garden** — Independent Research Project — Sep 2026 – Present
*Site (paper, code, browser demo): observable-garden.vercel.app*

- Built an open-source Python framework that tests whether a backtested strategy's performance is signal or an artifact of search, using a joint stationary block bootstrap of the maximum over every strategy tried; runs in the browser at the link above.
- Found that freezing the candidate set at the realized search (the usual deflated-Sharpe null) makes the null a uniform mixture over anchor ranks of the process null: calibrated on average, too lenient for a winner-anchored search; registered simulations matched the computed limits.
- Extended the framework to machine-learning strategies with a leak-tested walk-forward pipeline (block ridge stacked with gradient-boosted trees), validated on synthetic panels with planted edges; parallelized on AWS EC2.

**IMC Prosperity 4** — Algorithmic Trading Competition — Apr 2026

- Placed approximately 550th globally (top 3%) among 18,803 teams in IMC Trading's five-round trading challenge.
- Developed Python market-making logic quoting around an estimated fair value with inventory and position-limit management, and implemented pricing and trading strategies for the options products.

**Borgo Restaurant** — New York, NY — Jun 2025 – Jul 2025
*Line Cook*

- Prepared and plated garde-manger dishes in a high-volume NYC restaurant at full capacity through its busiest season, regularly working shifts of up to 16 hours while maintaining speed, accuracy, and quality standards.

**Classical Piano** — New York, NY

- Won the American Fine Arts Festival International Romantic Competition (2024) with Beethoven's "Pathétique" Sonata, and was invited to perform the winning program at Carnegie Hall.

## SKILLS & INTERESTS

**Languages:** Fluent in English and Russian
**Technical:** Python (pandas, NumPy, Polars, scikit-learn, LightGBM, Plotly); bootstrap and multiple-testing methods; Git; AWS EC2; Microsoft Excel
**Interests:** Classical Piano; Brazilian Jiu Jitsu; Chess