NICHOLAS MAROULIS

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EDUCATION

Duke University **Expected May 2026**
B.S. in Mathematics and Computer Science, Minor in Statistical Science (GPA: 3.98 / 4.0) *Durham, NC*

Relevant Coursework: Probability, Combinatorics, Elements of Machine Learning, Data Structures and Algorithms, Design and Analysis of Algorithms, Regression Analysis, Bayesian Statistics, Financial Derivatives

Extracurriculars: Duke Quantitative Finance, Duke Applied Machine Learning, Duke Sports Analytics, Duke Club Tennis, SIG Quantitative Trading Discovery Day, Flow Traders Summer Trading Course (1st place team trading competition)

WORK EXPERIENCE

Angstrom Sports **May 2024 – Aug 2024**
Data Science and Sports Trader Intern *London, England*
- Developing and analyzing player-level rating systems in Python to enhance the accuracy of college basketball simulations using over 27,000 games worth of play-by-play data.
- Monitoring bet flows and adjusting betting lines to ensure market alignment for a leading provider of sports pricing models.

Fuqua School of Business **Aug 2023 – Present**
Research Assistant / Data Analyst *Durham, NC*
- Coauthored scholarly paper with Prof. William J. Mayew assessing tennis rating systems; presented findings to the United States Tennis Association (USTA) and currently under review by *ITF Coaching and Sport Science Review*.
- Created and compared the performance of logistic regression models forecasting match results in R, utilizing data from over 1000 matches within the Universal Tennis Rating (UTR) and World Tennis Number (WTN) tennis rating systems.

Duke Math Department **Jan 2024 – May 2024**
Probability Teaching Assistant *Durham, NC*
- Selected to lead the help rooms for Math 230 (Probability) and Math 231 (An Algorithmic Introduction to Probability and its Applications), providing homework guidance and concept explanations to enhance student understanding and performance.

Duke Bass Connections, Data+ **May 2023 – Aug 2023**
Undergraduate Researcher *Durham, NC*
- Collaborated with students, professors, and hospital staff to develop a simulation-based policy tool, using Python libraries (Pandas and Matplotlib) and 2 years of historical surgery data, to evaluate the efficiency of Duke Hospital operating room (OR) schedules.
- Achieved a 10% improvement in bed utilization by applying a simulated annealing algorithm to find a near-optimal OR schedule.

PROJECTS

Event Contract Price Modeling **Jan 2024 – Present**
- Worked with a team of students to develop predictive models for pricing event contracts on Kalshi, with a focus on financial instruments such as treasury yields and oil prices using ICE exchange data.
- Gained experience in time series analysis, including ARIMA and Ito models, and enhanced skills in markets and probability, web scraping, API integration, and the application of machine learning to simulate and analyze financial events.

Desmos Dojo **Apr 2020 – May 2022**
- Created an 11-video online course, Introduction to Creating Desmos Art, transforming a personal hobby into a structured educational resource on how to use the Desmos Graphing Calculator to generate artwork with mathematical functions.
- Led over 20 hours of in-person interactive workshops, guiding elementary school students in creating drawings with Desmos.

Euclid Lab Collaborative Math Research **Summer of 2020 and 2021**
- Conducted collaborative research on unsolved problems in knot theory, number theory, graph theory, and algebra.
- Produced two group papers detailing our creative approaches: Rational Distance Problem and Amphichiral 2-Component Link with Linking Number 8 and Five Appearances in Pascal's Triangle, the Perfect Cuboid, and the Collatz Conjecture.

HONORS

American Invitational Mathematics Examination (AIME) Qualifier – *Mathematical Association of America*
- Qualified by ranking in the top 2.5% of scores nationally in the American Math Competition (AMC).

International Mathematical Modeling Challenge (IM^{2}C) Regional Finalist - *Consortium for Mathematics and its Applications*
- Placed in top 6 nationally for models identifying the greatest men's golfer of all time and best 2018 women's tennis player.

Arizona Tennis State Champions – *Brophy College Preparatory*
- Captain of multiple-time Arizona State High School Championship Tennis Team.

2021 Boys Division I Tennis All-State (Honorable Mention) – *Arizona Interscholastic Association*
- Awarded for an undefeated singles record and semifinalist in boys doubles state tournament.

SKILLS AND INTERESTS

- **Skills:** Java, Python, R, LaTeX
- **Interests/Hobbies:** Sports Betting (Arbitrage), Fantasy Sport Models, Tennis, Travel, Greek Food