

# Joe H Hollander

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*Passionate and motivated high school student with a strong interest in finance, mathematics, and their intersection. Always eager to learn more and collaborate with others.*

## EDUCATION

South Burlington High School  
Current GPA: 3.99/4.0, PSAT: 1520/1520

South Burlington, VT  
August 2022–Present

**Relevant Coursework:** AP Calculus BC (Exam Score: 5/5)

University of Vermont  
GPA: 4.0/4.0

Burlington, VT  
July 2024

**Relevant Coursework:** Calculus III (Multivariable Calculus)

## PROJECTS

### KAGGLE COMPETITIONS

- Participated in Kaggle competitions, most recently placing in the top **25%** of over 3000 participants in the Podcast Listening Challenge
- Applied data cleaning techniques, including imputation, dimension reduction, normalization, and feature engineering, to enhance model performance
- Implemented and optimized machine learning models including Random Forest, Clustering, and Ensemble methods for competitive prediction challenges
- Created insightful data visualizations using Matplotlib and Seaborn

### OPTIONS PRICING MODELS

- Implemented the Black-Scholes model in Python to calculate theoretical values of European options with precision
- Developed interactive visualizations demonstrating how changes in underlying prices affect option valuations
- Created graphical representations of simple option strategies to analyze risk-reward relationships
- Built Binomial Tree models to accurately price both American and European style options

### CRYPTOCURRENCY DATA COLLECTION

- Engineered a data collection system using Websocket and REST APIs to gather comprehensive second-by-second market data from the Kraken exchange
- Developed asynchronous Python functions to process and display real-time orderbook data and market statistics
- Optimized data storage solutions using Parquet file format, Git version control, and Docker containers

## SKILLS

- **Programming:** Python 3 (NumPy, Pandas, Matplotlib)
- **Data Science:** Machine Learning (Scikit-learn, LightGBM, XGBoost)
- **Software:** Git, Docker, Parquet, LaTeX

## AWARDS & ACHIEVEMENTS

- **National Merit Semifinalist:** Perfect PSAT score
- **1st Regional Prize in the Vermont High School Prize Examination:** State-wide math exam (May 2024)
- **7th Place Individual Award Math League:** State-wide math competition (2025)
- **SBHS High Honor Roll:** All's A's for the entirety of high school

## EXTRACURRICULAR ACTIVITIES

- Math League Champions (2022-2025), Captain (2025)
  - Varsity Ultimate Frisbee (Spring 2024, 2025)
  - Varsity Soccer (Fall 2024)
- Club Soccer (2017-2025), Captain (2025)
  - Ping Pong Club President (2024-2025)
  - Math Tutoring (~30 hours)