






Michael Capriotti

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Education

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- Northwestern University** - B.A. in Computer Science & Mathematics *Evanston, IL*
◦ **Coursework:** Fundamentals of Computer Programming I, Linear Algebra *2024 - 2028*
- Illinois Mathematics and Science Academy** - High School *Aurora, IL*
◦ **GPA:** 3.95 *2021 - 2024*
◦ **Coursework:** Computer Science Inquiry, Calculus, Differential Equations, Statistics, Calculus-Based Physics I & II, Modern Physics, Physical Chemistry

Relevant Work Experience

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- Full Stack Development Intern - Hudson Design House** *Oswego, IL / Remote*
July 2024 - Present
◦ Creating frontend using HTML, CSS, and JavaScript, designing dynamic, responsive user interfaces for product catalogs, shopping carts, and checkout pages. Implementing payment solutions using Square's API to process transactions, manage customer data, and track sales, improving transaction efficiency and user experience.
◦ Optimizing database queries and implemented indexing in MySQL to improve site performance and reduce page load times to handles large amounts of user and transaction data efficiently.
- Quantum Computing Research Intern - Los Alamos National Laboratory** [Github](#)  *Remote*
Feb 2024 - Present
◦ Applied quantum-classical hybrid methods to improve precision and computational speed in solving Quadratic Unconstrained Binary Optimization (QUBO) problems. Enhanced the performance of the Quantum Approximate Optimization Algorithm (QAOA) by using semidefinite programming warmstarts, with the Goemans-Williamson relaxation.
◦ Benchmarked performance of algorithm by testing on multiple problem types: Portfolio Optimization (using Markowitz model with geometric Brownian motion), Random QUBOs, Traveling Salesman Problem, and Maximum Independent Set, furthering real-world combinatorial optimization using quantum computing.
◦ Explored the application of the continuous relaxation warmstart method to non-convex problems, traditionally used for convex ones. Demonstrated that our approach performed effectively at higher qubit sizes, unlike the continuous relaxation.
- Data Science Research Intern - Northwestern Kellogg School of Management** [Github](#)  *Evanston, IL*
August 2022 - June 2024
◦ Conducted a study analyzing the educational backgrounds of 100,000 executives at top firms in 1960 and 2005, revealing shifts in the influence of university prestige on career advancement. Used AI to examine demographic changes in gender and ethnicity over time, providing new insights into the evolving importance of university prestige.
◦ Conducted a study on the impact of executive backgrounds on company performance, examining how executive deaths affect stock prices and the role of founder, family, and non-family directors in corporate stability. Analyzed over 1,000 obituaries to correlate executive deaths with stock price fluctuations, offering insights into leadership succession and market response.
◦ Developed a custom OCR-based data extraction method using Pytesseract to digitize obituary text from images. Leveraged UI automation (Pyppeteer) to automatize feeding data through ChatGPT, increasing efficiency of analyzing data. Utilized Pandas to effectively sort data and Openpyxl to organize Excel files.

Academic Conferences

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- Undergraduate University's Prestige on Top Firm Executives** *Digital Commons 2024* 
Frydman C, Capriotti M, Sun D.
- Executive's Firm Relations and Implications of Exogenous Death** *Digital Commons 2023* 
Frydman C, Capriotti M, Sun D.

Additional Information

Languages: Python, HTML/CSS, MySQL, Racket

Technologies: Jupyter Notebook, Google Colab, Git, Visual Studio Code, Excel, Wordpress

Frameworks and Libraries: Pandas, NumPy, Matplotlib, Seaborn, Openpyxl, Pyppeteer, Pytesseract, Qiskit

Activities: Consultants Advising Student Enterprises, Consult Your Community, Minority Business Association

Programs: MIT Introduction to Engineering, and Science (MITES), Wharton Global Youth Program

Interests: Ping Pong, Tennis, Golf, Star Wars, Batman, Spiderman, Cooking