Marwan Bit

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EDUCATION

HARVEY MUDD COLLEGE, CLAREMONT CA

B.S Joint Computer Science and Math (3.8 GPA)   *August 2021 - May 2025*

- **Relevant Courses:** Data Structures and Program Development, Machine Learning, Information Theory, Computability and Logic, Algorithms, Data Analytics and Visualization.

WORK EXPERIENCE

Tradeweb Software Engineering Clinic (Team Lead)   *January 2025– May 2025*

- Led a team of six seniors in partnership with fintech firm **Tradeweb** to extend an **Algorithmic Trading Suite.**
- Integrated Tradeweb's **pricing services (RFQ and Streaming Protocols)** to enhance algorithmic trading capabilities.
- Designed **reactive, asynchronous microservices** using **Java**, **Reactor Kafka, and Apache Kafka**, improving throughput and scalability.
- Implemented a **modular microservice architecture**, emphasizing **fault-tolerance, real-time event streaming**, and **clean system observability.**

RELEVANT PROJECTS

FILE UPLOADER   *September 2025 – October 2025*

- **Developed** a full-stack web application using **Next.js**, **TypeScript**, and **React**, featuring a responsive and accessible UI built with **ShadcnUI** and **TailwindCSS** that enables users to create, upload, and manage folders and files, implementing the Model-View-Controller **(MVC)** Pattern.
- **Integrated PostgreSQL** with **Amazon S3** for efficient file storage and metadata management, leveraging **Prisma ORM** for clean, maintainable database queries.
- **Implemented** robust backend functionality via a **RESTful API**, supporting core application operations.
- **Applied** best software engineering practices by **containerizing with Docker**, maintaining version control through **Git/GitHub**, and writing **unit, integration, and end-to-end tests** with **Jest** and **Cypress**.
- **Managed** authentication and authorization using **Clerk**, iterating on both **JWT** and **session-based** approaches to enhance security and scalability.

BINOMIAL + BLACK SCHOLES PRICING DASHBOARD   *May 2025 – Present*

- Collaborated with a partner to develop a full-stack options pricing application leveraging the **Yahoo Finance API**.
- Implemented **Black-Scholes** and **Binomial pricing models** to compute and compare theoretical option prices in real time.
- Built an interactive frontend using **React**, **Next.js**, **TypeScript**, and **TailwindCSS** to visualize live market data and implied volatility surfaces.
- Developed a performant **FastAPI** backend in **Python** for real-time market data retrieval and processing.

SKILLS

Languages: Python, C++, Java, JavaScript, TypeScript, SQL, HTML/CSS
Frameworks & Libraries: React, Next.js, Node.js, Express, scikit-learn, Jest, Cypress
Systems & Tools: Apache Kafka, Reactor Kafka, Redis, Docker, AWS (S3, Lambda, CloudWatch), PostgreSQL, Prisma, MongoDB, Git/GitHub, CI/CD (GitHub Actions), shadcn/ui, TailwindCSS