Mohammed Aboulmagd

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EDUCATION

DePaul University, Chicago, IL **January 2018 --- March 2020**
Master of Science, Computer Science (Real-time Software)
GPA: 3.85/4.00

WORK EXPERIENCE

Eagle Market Makers --- C++ Software Engineer (Contract) **July 2024 --- Present**

- Architected and implemented CME Market By Order (L3/MBO) market data feed, from scratch, including full data recovery mechanism (used mostly for my own testing purposes, since my design and implementation resulted in very rarely dropping packets). This project resulted in significant PnL upgrade for the firm since I was now disseminating 20 asks and bids for every orderbook, as opposed to the incumbent MBP feed (just price and quantity for 5 asks and bids).
- Iterated on the MBO application to allow for CME native iceberg detection. This again helped traders come up with novel market making algorithms for the development team to work on, hence increasing firm's PnL.
- Wrote GUI features in C#/Winforms to incorporate the above developments in the firm's trading platform after working closely with traders to devise a clean approach on how to fit in all MBO orders on limited screen real-estate.

CME Group --- Java Software Engineer II **September 2022 --- October 2023**

- Updated futures contracts' ledgers and settlement algorithms when new futures products were released.
- Decoupled applications to ensure smooth transition of systems to Google Cloud Platform (GCP).
- Supported builds and deployments for the team's application suite using proprietary software.

DV Trading --- Junior C++ and Qt Developer **October 2020 --- September 2022**

- Upgraded team's CME order routing from iLink2 to iLink3, essentially writing iLink3 from scratch.
- Collaborated with traders, which resulted in extensible code for efficient order algorithms, allowing for quick iterative development for future additions and modifications.
- Crafted various trading platform GUI features (including but not limited to highly configurable scalper, and an Excel DLL), and saved hours of operational inefficiencies by automating manual processes (PnL reconciliation, new trader on-boarding to the platform).

RELEVANT PROJECTS

Graphics Engine: [C++, Visual Studio 2022]

- Implemented real-time Win32 static and DLL libraries such as a multi-heap based memory system, a file handling system, and a linear algebra (3D math) library. All were done using an iterative and test-driven approach.
- Integrated said libraries with DirectX11 using design patterns to allow for orthogonal code.
- Engine supports perspective cameras, and can efficiently handle various game objects (meshes, textures, and shaders with basic lighting).

Multithreaded Audio Player: [C++17, Visual Studio 2019]

- Designed and implemented a thread-safe audio player application that uses Microsoft's WaveOut interface.
- Synchronized threads using thread-safe containers, mutexes/locks, conditional variables, and flags.
- Created a mechanism to coordinate graceful shutting down of all 24 threads using futures and promises.

Space Invaders: [C#, Visual Studio 2019]

- Wrote a playable Space Invaders (1978 arcade) replica.
- 100+ maintainable and easily extensible classes that make use of various design patterns.
- Design patterns included Visitor, Singleton, Factory, State, Flyweight, Proxy, Command, Strategy, Object Pools, Composite, Iterator, and Observer.

TECHNICAL SKILLS

Languages: C++, C#, Java, Python, Bash
Build Systems: GNU Make, CMake, Maven
Source Control: Git, Perforce
Databases: PostgreSQL, Oracle SQL
Operating Systems: Unix (Linux and MacOS), Windows
Other: Qt, Winforms, GCP, Kubernetes, Docker, DirectX11, Kafka