ALESSANDRO LORENZO
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EDUCATION

University of Michigan **Ann Arbor, MI**
Bachelor of Science in Engineering in Computer Science *August 2024*
GPA: 3.42 / 4.00 (Cum Laude Honors)
Relevant Coursework: Software Engineering, Data Structures and Algorithms, Operating Systems, Web Systems & Development

SKILLS

Programming Languages: C++, Python, C#, JavaScript, C
Technologies & Tools: Git, HTML, CSS, Unity, SQL, Label Studio, Jira
Languages: Spanish (Native Proficiency)

PROJECT EXPERIENCE

Network File Server *July 2024 – August 2024*
- Developed a multi-threaded secure network file server in C++, handling concurrent read, write, delete, and create requests via socket programming, improving server reliability and performance during high traffic
- Integrated security and encryption protocols to secure communication between clients and the server, preventing unauthorized access to directories or files and ensuring data confidentiality during file operations
- Optimized file system operations with synchronization techniques, locks, and condition variables reducing read/write conflicts, ensuring data integrity, and improving overall server performance in high-concurrency environment avoiding deadlocks

Insta485 *May 2024 – June 2024*
- Built a full-stack social media platform using dynamic server and client-side web pages with Python, HTML, CSS, and JavaScript, enabling asynchronous updates using AJAX resulting in a seamless user experience with real-time page interactions
- Integrated REST APIs and SQL database to dynamically manage and retrieve user data, enhancing page functionality without full page reloads, significantly improving application responsiveness and enabling users to like, comment, share, and follow others
- Worked on backend API and database design, ensuring efficient data flow and reducing latency, while implementing a secure login mechanism to securely track and manage individual data sessions

Rent-A-Bot *September 2023 – December 2023*
- Collaborated in a team using Agile development concepts to develop a co-op game with Unity and C#, applying game design concepts such as guidance, progression, game physics, and flow, resulting in a cohesive and engaging multiplayer experience
- Designed and implemented gameplay mechanics while writing unit tests as part of a TDD workflow with a focus on novelty, theming, and game juice, increasing player satisfaction and boosting overall gameplay engagement
- Led game testing and debugging utilizing Jira for project management to ensure technical soundness and smooth performance, resolving critical issues and delivering a polished, high-quality final product acquiring 2nd place at Michigan's Game Showcase

Stock Market Simulator *May 2023 – July 2023*
- Designed and developed a sophisticated stock exchange simulator in C++ with multiple priority queue structures to efficiently match buy/sell orders, accurately emulating a realistic stock market environment
- Utilized advanced data structures and algorithms from the STL library, applying object-oriented design principles such as abstraction, decomposition, and encapsulation to enhance system modularity and scalability
- Implemented min and max heaps to analyze performance of various priority queue implementations and evaluate efficiency, gaining insights into data structure optimization and improving execution time for complex trading scenarios

WORK EXPERIENCE

University of Michigan **Ann Arbor, MI**
Machine Learning Researcher *September 2022 – April 2023*
- Annotated 2500+ syllabi using Label Studio, validating a specific definition for significant writing component; trained machine learning model for annotation with an 80/20 test split, utilized natural language processing to scale human annotation to corpus
- Collected 345,289 syllabi from public Texas universities using web scraping in Python for research aimed at determining courses with a significant writing component, employing a text-as-data approach, achieving higher accuracy in identifying criteria
- Created 50+ data visualizations with Python to articulate model performance and insights to faculty; findings aligned with expectations of a lower number of courses with a significant writing component at under-developed institutions

LEADERSHIP EXPERIENCE

PHI THETA KAPPA HONOR SOCIETY - BETA PI THETA CHAPTER **Miami, FL**
President *April 2021 – April 2022*
- Managed and contributed to Hallmark Award submissions, actively participated in all essential weekly chapter meetings, regional and national events; Honors in Action initiative obtained first place Internationally Distinguished Research Project Award
- Guided and supported 100+ college freshmen, assisted them in navigating their college journey; organized 10+ student events, collaborated with 3 college departments across 5 campuses, increased community engagement by over 50%