SEAN LI

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Education

2021-2025 **UNIVERSITY OF MICHIGAN**

Bachelors of Science **ANN ARBOR, MI**

Major in Computer Science with a minor in Business Administration at the Stephen M. Ross School of Business

- Cumulative GPA: 3.8
- Coursework: Web Databases & Information Systems, User Interface Development, Intro to Computer Organization, Foundations of Computer Science, Data Structures and Algorithms, Discrete Mathematics, Applied Linear Algebra
- Supported independent projects for professors/students through Faculty Engineering/Arts Student Teams.

Experience

2022-2023 **LUCELEGANS PROJECT AT THE UNIVERSITY OF MICHIGAN** **ANN ARBOR, MI**

Sensors/Circuits, Build/Fabrication Team

- Engineered an innovative Python codebase from the ground up for Raspberry Pi, enabling real-time, responsive visualization of C. elegans movement patterns
- Optimized pre-existing C++ codebase focused on Arduino-based circuit interactions by implementing enhancements that enabled RFID signal activation to dynamically illuminate specific components
- Assembled circuit board relaying signals from a raspberry pi and arduino to an external speaker, monitor, and EL wires to create an interactive 3D model with varying audios, lights, and animations corresponding to unique actions

2021 - 2022 **TRUTTMANN LAB** **ANN ARBOR, MI**

Physiology Research Intern/UROP Undergraduate Researcher

- Improved cell profiling software's image recognition accuracy by 30%, significantly reducing the need for manual model tracing corrections by users
- Engineered a software solution for quick transfer of research metrics to Microsoft Excel, achieving a fourfold increase in data processing speed
- Refined protein experimentation techniques in imaging and protein replication, achieving a 50% efficiency boost which expedited lab testing
- Presented a seminar on impacts of gene knockdown in HPO-11 of MZE1 C. elegans and fluorescent signaling of Rab11::GFP and Pept1::dsRED using data analysis to model correlations between mass and signaling outcomes

Projects

- Redeveloped an Instagram prototype by utilizing REST APIs with Flask to handle posts, comments, and likes, implementing routes for displaying, creating, and deleting these entities with integrated SQLite as the database for storing user data. Connected the application to AWS, and secured API endpoints with HTTP Basic Authentication. Optimized data handling and response formatting to enhance performance and user experience
- Developed a search engine pipeline with Python scripts using MapReduce for data processing. Created a Flask-based API for search queries and document indexing, mappers for HTML document preprocessing and term frequency computation, and reducers for word count aggregation and IDF calculation. Optimized data pipelines, applied text processing and indexing algorithms, and created RESTful APIs
- Developed a program employing algorithms to determine the shortest distances between various points. The program offers three distinct modes: a standard MST mode that has a runtime of n^2 time, a Fast TSP mode that optimizes speed with n^2 time, and an Optimal TSP mode that uses a predictive function combining the standard MST mode to evaluate the feasibility of exploring the subsequent path using permutations to parse through a multitude of (n-1)! paths
- Created a word searcher harnessing hash tables to parse a database of 40,000 message entries with the capabilities of appending searches, clearing lists, and matching analogous messages while pinpointing timestamps, categories, and keywords with single letter commands by utilizing pattern recognition to elevate the precision of data insights
- Reimagined the Euchre card game into a dynamic digital platform utilizing vectors and pointers, enabling players to challenge both AI-driven adversaries and human opponents, enhancing gameplay experience and versatility
- Engineered an image resizer applying matrices and RGB channel integration to duplicate and scale images, delivering adaptive capabilities to meet user preferences
- Architected a stock market simulator centered around comparators and priority queues that allows for multiple traders to buy and sell various stocks at optimal prices with a feature using enums and state machines that replicates a time traveler and the changed decisions that would maximize the traders profit

Skills

- Experience with programming languages C++, C, Python, JavaScript, SQL
- Skilled in data analysis, data structures and algorithms, git, project management, CAD, Microsoft and Adobe apps
- Proficient in Mandarin