Jonathan Lin

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EDUCATION

University of London **April 2024**

Bachelor of Computer Science

- First Class Honors: **4.0/4.0 GPA**
- **Relevant Coursework:** Data Structures and Algorithms, Databases and Networking, Object Oriented Programming, Software Design and Development, Agile Methodologies, Test-Driven Development, Graphics Programming

PERSONAL PROJECTS

Full Stack MERN Fitness Tracker Web Application *React, Node.js, Express, MongoDB, Mongoose, Postman, Docker* Github

- Implemented an MVC application with asynchronous controllers to handle fitness JSON data in HTTP requests
- Utilized React Context API and Hooks for real-time UI-database syncing without redundant fetches or props drilling
- Utilized JSON Web Tokens (JWTs) to protect REST API endpoints and local storage to persist user sessions
- Implemented an authentication mechanism to share fitness data between the API and front-end via JWTs
- Utilized the bcrypt Node.js package to salt and hash passwords in async mode using a thread pool and the validator package to enforce password strength and safeguard user data in storage
- Constructed models using the Mongoose API and enforced document structure using schemas in MongoDB
- Containerized application for lightweight deployment, and employed layer caching for increased build process efficiency
- Streamlined API testing using test suites in Postman

Desktop DJ Application *C++, Projucer and JUCE Framework* Github

- Developed a cross-platform dual-deck DJ controller using multithreading and component-driven development that gives users fine-tuned control of multiple audio signals
- Integrated Digital Signal Processing effects such as LPF and HPF frequency attenuation and equal-power crossfading
- Remodeled an animated waveform to enable drag-and-drop loading of tracks and scrubbing of audio position with track metadata display
- Integrated hot cue markers for triggering vocal loops and melodic notes, and user-curated queues for song scheduling
- Enhanced the library playlist to persist between application loads and support filtering, searching, column-based sorting, importing and exporting using XML files

Twitter Sentiment Analysis with NLTK and ML *Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn* Github

- Developed a machine learning pipeline using Logic Regression, Multinomial Naive Bayes and SVM classifiers and Term Frequency-Inverse Document Frequency (TF-IDF) to predict polarity and subjectivity classifications of Tweets
- Assessed the performance of probabilistic classifiers using F1 scores, ROC-AUC curves and confusion matrices
- Preprocessed the data using Snowball stemming and lemmatization to normalize words to their canonical form
- Scraped over 50 000 Tweets using the Twitter API and cross-referenced a static CSV dataset for accuracy
- Serialized the scraped dataset into a pickle file to improve future scraping efficiency through de-serialization

Full Stack MERN Project Management System *React, Node.js, Apollo, GraphQL, Express, MongoDB, Mongoose* Github

- Developed an application that allows users to manage clients, projects and client-project relationships
- Performed business domain modeling in GraphQL using schema design
- Used Apollo Client to manage state and to fetch and modify application data to integrate into the Bootstrap UI
- Streamlined API requests with Optimistic UI pattern to create a robust and responsive UI
- Utilized Apollo Client normalized in-memory cache for real-time rendering of client data
- Employed React Router for state management and dynamic routing of a single-page application
- Implemented cascading deletions in GraphQL for efficient removal of redundant project data

SKILLS & INTERESTS

- **Languages:** C++, Java, JavaScript, TypeScript, Python, Go, SQL, HTML, CSS, Bash
- **Technologies:** Node.js, Express, React, MongoDB, AWS, Docker, jQuery, Apollo, GraphQL, Postman, Git, Github, Bootstrap, Linux, Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn
- **Interests:** Chess, Violin, Powerlifting