Jun Zhang

Iowa City, Iowa, United States, 52245
jzhang306@uiowa.edu

Education

Bachelor of Arts in Computer Science

Expected to graduate in May, 2024 with a B.A. degree and a mathematics minor.

University of Iowa , Iowa City | January 2021 - Present

Key Skills

- Java
- Object-Oriented Programming
- C
- python
- MySQL

Languages

- English at professional working level
- Chinese at native level

Projects

RailTrack: A Database System for Train Station Operations

| January 2024 - May 2024

Database Description:

The database project is a system that can handle the daily operations of a train network efficiently and effectively. The system can store and process various types of information related to the train network, such as the details of the trains, stations, tracks, routes, passengers, and tickets. The system can also provide assorted services to the passengers, such as helping them to find the best train for their destination by the optimized scheduling and price, book and cancel tickets online or at the station, and check the seat availability and occupancy of the trains, and passenger could provide feedback and support to the station. The system can also assist the staff in managing the train schedules, seat assignments, and maintenance issues, as well as reporting any problems or incidents that may occur. The system can also generate useful reports and statistics on the train station's performance and revenue, such as the number of passengers, the ticket sales, the train delays, and customer satisfaction. Implemented in MySQL.

WARP Sensor Network Refactoring and Analysis

| January 2024 - May 2024

● Collaborated within a team to refactor the Swift codebase into Java, prioritizing modularity and maintainability to streamline the development process.

● Applied object-oriented design patterns to the Java rewrite, enhancing code readability and efficiency, and contributing to a more scalable and adaptable system.

● Developed and integrated a latency evaluation module within the WARP system to measure the end-to-end latency of network flows, emphasizing precision and performance evaluation. Methods are implemented corresponding to interfaces by a planned sequence diagram.

● Designed and implemented a GUI table in Eclipse configuration along with a UML diagram (by yatta.de) for real-time visualization of latency metrics, providing a user-friendly interface for monitoring system performance.

● Conducted thorough testing and debugging procedures to ensure the reliability and accuracy of the latency evaluation feature, demonstrating a commitment to delivering a robust and error-free system.

Network Intelligence Suite and Research Methodology Implementation

| August 2023 - December 2023

● Developed Python scripts to emulate key features of ping and traceroute utilities, employing raw sockets and ICMP for echo requests and replies. Implemented traceroute functionality by manipulating Time-To-Live (TTL) values to interpret ICMP timeout responses.

● Designed and deployed a robust multi-threaded TCP server in Python, accommodating concurrent client requests. Integrated real-time network status, bandwidth analysis, and latency measurements based on client demands. Ensured stable server operation through comprehensive error handling and communication protocols.

● Created a methodology for class research using Selenium WebDriver for automated web crawling and data collection. Developed scripts to navigate, extract, and process data from web pages, showcasing proficiency in web automation and data handling. Analyzed and interpreted collected data to provide effective insights in response to the research question.

Predicting Stock Market Trends Using Sentiment Analysis on Google News: An Empirical Study

This project focuses on the utilization of sentiment analysis applied to financial news articles from Google News, aiming to predict stock market trends. The volatile nature of the stock market, heavily influenced by news and human sentiment, provides a rich dataset for analysis using Natural Language Processing (NLP) techniques.

Methodology:

- Utilize a web crawler to gather news articles from Google News.
- Apply NLP techniques to analyze article sentiment, generating positive, negative, and compound sentiment scores.
- Use the sentiment scores as features to fit machine learning models, with stock data from Yahoo! Finance as labels.
- Evaluate model performance using accuracy, precision, recall, and F1 score metrics to determine the most suitable algorithm for trend prediction.

Data Structure Utilization for Query Optimization

| April 2023 - May 2023

● Leveraged Sets and Maps data structures to enhance query performance on a U.S. Department of Transportation dataset. Developed efficient Java algorithms for tasks such as identifying distinct destinations, calculating flight frequencies, and analyzing intra-state flight percentages.

● Demonstrated proficiency in advanced Java collections, algorithmic thinking, and JUnit for debugging. Successfully manipulated large datasets, optimized query performance using appropriate data structures, and ensured accuracy through comprehensive testing, showcasing a strong combination of technical skills in data manipulation and algorithm design.

Geo-Twitter Search Application

| November 2021 - December 2021

● Developed a Python-based application integrating Google Maps API and Twitter API for a unique geo-social media experience. Utilized Tkinter module for the graphical user interface, enabling users to input search keywords. Implemented advanced API integration, fetching and displaying relevant tweets with user information through the Twitter API, while simultaneously using the Google Maps API to pinpoint and visualize tweet locations on a map.

● Showcased strong skills in API integration, GUI development using Tkinter, and an innovative approach to merging social media and geographic data. The application enhances user experience by providing a comprehensive view of tweet context and origins, offering valuable insights into the geographic distribution of social media trends.