

# AOLEI (OLIVIA) ZHOU

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## EDUCATION

### Carnegie Mellon University

MCDS in SCS - Computer System track, **GPA: 3.82/4**

**Courses:** Database Systems, Cloud Computing, Distributed Systems, Storage Systems, Machine Learning, Data Science

Pittsburgh, PA

09/2022 - 12/2023

### Southern University of Science and Technology

B.E in Computer Science and Engineering, **GPA: 3.85/4** | Top 10 graduate for exceptional academic performance

Shenzhen, China

09/2018 - 06/2022

## EXPERIENCE

### Green Action Studio

Software Engineer Intern

Schenectady, NY

05/2023 - 08/2023

- Led design and implementation of key features for a cloud-native eclectic vehicle management platform, including network admin web app, driver mobile app, charging session reports, and payment, etc. using **TypeScript**, and **Node.js**.
- Built frontend with **React.js**, **HTML**, Tailwind **CSS**, and maintained a powerful search index using Algolia.
- Developed backend, managed cloud resources via **AWS CDK**, utilized **AWS Lambda** for API Gateway, **MongoDB** for databases
- Streamlined the workflow and maintained data persistent by **AWS Kafka** across microservices using subscription and publication.
- Designed **MySQL** table schema for metrics reporting, and built SQL auto-generation helper for data format customizations.
- Collaborated with PMs and Engineers to closely monitor **AWS CloudWatch** metrics and promptly resolve bugs after launch.
- Boosted backend model test line coverage from **52.01%** to **96.49%** using a comprehensive unit testing approach by **ViTest**.
- Leveraged **Github Copilot** to achieve **200%** exceptional efficiency, generating over 3000 lines of testing code in a single day.
- Documented design decisions, API usage, and system architecture; adept in **Git** workflows for issue tracking, branching, and PRs.

### National University of Singapore

Research Fellow

Singapore

08/2021 - 12/2021

- Designed and developed a bomb-defused AR platform on NReal in Unity using **C#**, incorporating immersive gameplay elements.
- Implemented **TCP**-based client-server connection between AR, machine arm, and RL model for seamless communication.
- Built a real-time text-to-speech feature into the AR platform using the **Azure TTS API**.
- Enhanced user engagement by integrating multi-way interaction and adaptive gameplay mechanics in the AR platform.

### Tongyuan Digital Technology Co., Ltd

Software Engineer Intern

Singapore

06/2020 - 07/2020

- Developed a real estate Android app for the housing regulatory department to review, approve or reject real estate projects.
- Utilized **Android Studio** for front-end development, ensuring a user-friendly interface.
- Contributed to backend **RESTful API** service using **Java**, **Spring Boot**, Spring MVC, and **MySQL** integration.
- Conducted API testing with **Postman**, validating app functionality and performance.

## PROJECTS

### Cloud Infrastructure Management & Data Processing Optimization

CMU | 02/2023 - 05/2023

- Managed and optimized cloud infrastructure on **AWS**, leveraging **Terraform** for automated resource provisioning.
- Developed scalable data processing pipelines using **Apache Spark** and HDFS, improving data processing speed by **4x**.
- Designed scheduling policies with **Kubernetes** scheduler extender in **Golang** for resource optimization in a heterogeneous cloud.
- Containerized the app using **Docker**, simplifying deployment and maintenance in a virtualized environment.

### Advanced Query Optimization in PostgreSQL

CMU | 03/2023 - 05/2023

- Researched and implemented a query optimization algorithm in **C++** using real-time adaptive optimization and plan switching.
- Incorporated a background parallel **KNN**-based machine learning algorithm for query optimization with real-time statistics.
- Developed a plan switching mechanism for dynamic plan adjustments based on cost estimation during query execution.
- Conducted scalability tests on JOB benchmark, achieving a **120%** improvement over the Postgres baseline in **36.7%** of queries.

### BusTub Database System

CMU | 01/2022 - 08/2022

- Implemented multiple functions and modules in CMU BusTub, a mock database system, achieving a top **20** ranking.
- Built page table directory, buffer pool manager, execution engine in volcano model, and lock manager for concurrency control.

### Visualizing UI-related Reviews from Google Play Store

Individual Project | 01/2022 - 08/2022

- Built a platform for App developers to gain insights into their UI effectiveness by performing sentiment analysis on user reviews.
- Crawled and extract a vast dataset of **36k** reviews from the Google Play Store in **Python**, employing data cleaning, preprocessing.
- Fintuned a large language model from **BERT** to perform sentiment analysis, and filtered for UI-relevant reviews.
- Built the website using **Vue.js** and Javascript for frontend visualization, **Flask** for the backend, and **MongoDB** for the database.

## SKILLS

- **Languages:** C/C++, Python, Java, C#, Golang, PostgreSQL, MySQL, Spark, Cassandra DB, MongoDB, JavaScript, TypeScript
- **Tools:** AWS, Kubernetes, Docker, Spring Boot, Git, maven, Azure, Flask, Linux, React.js, Terraform, Node.js, Github Copilot