Yuchen Liang

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Education

Carnegie Mellon University
Bachelor of Science
Computer Science, May 2024

QPA: 3.6

Additional Minors:
SCS Systems Concentration

Relevant Coursework:
- Advanced Database Systems *
- Program Analysis *
- Machine Learning *
- Algorithm Design and Analysis
- Distributed Systems
- Database Systems
- Intro to Computer Systems
- Parallel and Sequential Data Structures and Algorithms

* Courses in Spring 2023

Shady Side Academy, PA
High School Diploma
May 2020

Skills

Programming Languages (Proficient):
C · C++ · Java · Python

Programming Languages (Familiar):
Rust · SQL · JavaScript · OCaml

Operating Systems:
Linux · MacOS · Windows

Tools:
Shell · Git · Bazel · CMake · GDB · Vim · LaTeX

Other Technical Skills:
AWS · PostgreSQL · Database · Distributed Systems

Languages:
Mandarin · English

Experience

Carnegie Mellon University · Teaching Assistant for Database Systems   Fall 2022 - present
- Designed query execution course projects; hosted office hours for projects and homework.
- Supported order by clause, topN optimization, left-joins in **BusTub**.
- Supported multi-key hash-join in **Bustub**.

Argo AI · Software Engineering Intern (C++, Python)   Summer 2022
- Develop and integrate new frontend and backend features into Argo's simulation pipelines for autonomous vehicles
- Investigate ways to utilize public traffic data set for automatic scenario generation

Carnegie Mellon University · Independent Study with CMU DB-Group   Spring 2022
- Examine how filter structures (bloom filters, cuckoo filters, zone maps, SuRF) can be leveraged to accelerate selection in open-source column storage formats (Apache Arrow)

Selected Projects

db721_fdw · C, C++   Spring 2023
- Built a PostgreSQL foreign data wrapper extension for the db721 columnar format.
- Implemented projection push-down and predicate push-down using zone maps.

cmu-db/bustub · C++   Fall 2021
- A educational relational database management system.
- Implemented a **buffer pool manager** moving data back and forth between disk and memory.
- Implemented a disk-backed hash index based on the **extendible hashing** scheme.
- Implement **volcano style query executors** (sequential scan, hash-join, aggregation, etc.)
- Implemented a **lock manager** supporting different isolation levels on transactions.

2pc-collage · Java   Spring 2022
- A distributed group collage publishing service using **two-phase commit**

file-cache · Java   Spring 2022
- A **whole-file caching system** that support RPC syscalls from client.
- Utilized "check-on-use" update propagation policy to preserve one-copy semantics at an open-close granularity

lib-rpc · C   Spring 2022
- An **RPC file services** library built from scratch with the ability to perform syscalls (e.g. open, close, read, write, lseek, unlink)
- Implemented customized serialization protocol for dirtree, a variable length recursive structure

Publications

FitNibble: A Field Study to Evaluate the Utility and Usability of Automatic Diet Monitoring in Food Journaling using an Eyeglasses-based Wearable
Abdelkareem Bedri, Yuchen Liang, Sudershan Boovaraghavan, Geoff Kaufman, Mayank Goel, To appear in Proceedings of the Annual Conference on Intelligent User Interfaces (IUI 2022)

Awards and Honors

- *Dean's List, High Honors*, CMU School of Computer Science, Fall 2021.