Zecheng Qian

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EDUCATION

- **Master of Computer Science (GPA 3.83/4.0)** *Sep.2021-Dec.2022 (Expected)*

College of Science and Engineering, University of Minnesota – Twin Cities

- **Bachelor of Science in Computer Science, Bachelor of Science in Mathematics** *Jan.2019-May.2021*

College of Science and Engineering, University of Minnesota – Twin Cities

- **Bachelor of Science in Information Engineering (Transferred Out, GPA 3.87/4.0)** *Sep.2016-Sep.2018*

Zhejiang University, Hangzhou, China

Minor in Advanced Honor Class of Engineering Education (ACEE), Chu Kochen Honors College

Backend Skills

- Programming Languages: C/C++, Go, Python, SQL
- Tools: Git, Linux, Docker, Kubernetes, Google Cloud
- Coursework: Database Systems, Operating Systems, Distributed Systems, Computer Graphics, Machine Learning

RESEARCH AND INERNSHIPS

Pantheon System, CA, USA

Backend Software Engineer Intern *June.2022 – Present*

- Developed an application with Go, Python to run workflows such as cloning/exporting code/database/filesystem and doing manual/automated backups using the Google Cloud Build backend and Google Artifact Registry
- Added a command to wipe the filesystem and the orphan volume on Google Cloud Storage for a frozen customer site which saved the cost by about $3,000/month for the company
- Developed using a microservice architecture, applications are containerized on Google Cloud, using Kubernetes for container orchestration
- Collaborated with the team using Git for version control, CI/CD for automated deployment, Jira, Scrum as agile project management tools, and Confluence for Wiki document

University of Minnesota, MN, USA

Undergraduate Research Assistant (Advisor: Ju Sun) *Jan.2020 – Sep.2020*

- Developed a robust autoencoder and a factorization algorithm against non-adversarial sparse corruptions to images
- Experiments were conducted on ImageNet, CIFAR-10, CIFAR-100, and MNIST, with an accuracy above 90%
- Publication: **Rethink Autoencoders: Robust Manifold Learning** (**ICML UDL 2020**)

Backend PROJECT EXPERIENCE

- **BusTub: A Single-Node Relational Database Management System** *May.2022 – July.2022*
  - Implemented a buffer pool based on the LRU policy and an Extendible Hash Table Index with C++
  - Implemented a thread-safe query execution engine based on the Volcano model, supporting SELECT, DELETE, UPDATE, JOIN, AGGREGATION, LIMIT, DISTINCT operations
  - Implemented a concurrency control policy based on the two-phase locking protocol, supporting three isolation levels, and a global lock manager to prevent deadlock using the Wound-Wait algorithm
- **Recursive Ray Tracer: Computer Graphics** *March.2022 – July.2022*
  - Implemented a recursive ray tracer based on the Blinn-Phong Illumination Model with C++, CMake
  - Implemented flat shading, smooth shading, texture mapping, normal mapping, transparency, and reflection
  - Implemented an interactive program with OpenGL that can simulate a first-person's view to walk through a 3D scene and respond to real-time keyboard events, with 3D viewing transformation and projection transformation
- **Visual Transit System Simulator** *Jan.2020 – May.2020*
  - Designed and implemented a visual transit simulator for buses running in Minneapolis with C++ and makefile
  - Implemented unit testing and regression testing with Google Test
  - Generated project docs with Doxygen
- **Robot for Solving Rubik's Cube** *Mar.2018 – May.2019*
  - Designed and implemented a two-hand robot with C++ and Qt, capable of solving and recovering any disordered 3x3 Rubik's Cube within 15 seconds
  - Implemented edge detection and color extraction algorithms with OpenCV, increasing the recognition accuracy to above 90%