Annan Zheng

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Work Authorization: No sponsorship required, green card application in progress

TECHNICAL SKILLS

Programming Languages: C/C++, Java, Python, JavaScript, HTML/CSS, SQL, R, MATLAB, C#, .NET

Technologies/Frameworks: Linux, Git, Docker, MySQL, React, NodeJS, REST API, AWS, TensorFlow, PLC

EDUCATION

University of Michigan, Ann Arbor   Sep 2021 – May 2024

Bachelor of Science in Computer Science & Mathematics   *GPA: 3.71/4.0 with University Honors*

- **Core Coursework**: Data Structures and Algorithms, Operating Systems, Database Management Systems, Web Development, User Interface Development, Software Engineering, Computer Organization, Machine Learning

WORK EXPERIENCE

Mitsubishi Electric Automation   May 2023 – Aug 2023

Software Development Engineer intern

- Developed automated data exchange and dynamic analysis processes between robots and servers using **Python** and **scripting**
- Applied **machine learning** models to analyze hardware usage, detect abnormalities, and predict production yield
- Designed optimal **logic solutions** to simulate digital circuits for a braking system, resulting in a 15% faster response time
- Developed user-friendly Human-Machine Interface (**HMI**) platforms for seamless laptop control of multiple robots

SoundCool   June 2023 – Aug 2023

Web Developer & Researcher

- Transformed SoundCool's iOS app user interface into a web version to facilitate multi-platform interactions
- Managed and optimized **MySQL** database to support real-time music collaboration, ensuring secure data storage
- Built server-rendered pages using **Next.js**, significantly improving initial page load times and enhancing search engine accessibility to crawl website content efficiently
- Enhanced system performance and scalability by simplifying server infrastructure, updating deprecated node modules, and resolving WebSocket unconnectivity, WebPack incompatibilities and backend data loss

ClassTranscribe   May 2023 – Dec 2023

Full Stack Web Developer

- Maintained and progressed an interactive online video stream player using **ReactJS** and **ReduxJS**
- Implemented features allowing users to adjust video speed, transcript language, and enable a two-screen watch version
- Designed and developed **RESTful APIs** using **Golang** for efficient video information retrieval and updates

PROJECTS

Operating System Kernel Components

- Implemented a user-level preemptive **thread library** with CPU yielding and monitor support. Enforced atomicity with interrupt disabling and coordination of CPU cores to provide mutual exclusion in multiprocessor systems
- Developed an **external memory pager** that manages user-level processes' virtual address space featuring LRU clock eviction, fork-based process creation with copy-on-write, process yielding, page fault handling, and garbage collection
- Created a multi-threaded **network file server** supporting concurrency using readers-writer lock. Utilized socket programming for an effective client-server interface

Projects for Database Management Systems

- Designed relational database schema for Facebook-like service and created external views for displaying data
- Developed a **Java** application for SQL executions with Java Database Connectivity (JDBC)
- Migrated the Facebook dataset from Oracle relational database to **MySQL** for higher schema flexibility in JSON format, and translated the SQL queries to **MongoDB** syntax

LC2K(32-bit computer) Processor Simulator

- Created a **C** program that can process multiple LC-2K assembly files and produce executable machine code
- Built a simulator capable of understanding LC-2K decimal machine code and executing operations
- Simulated **pipelined** LC-2K processor with prediction to reduce cycles per instruction and runtime
- Designed a caching function with a Write-back policy to optimize memory access latency

Interactive Game Development

- Designed and prototyped complete games, and then developed interactive user interfaces using JavaScript/jQuery
- Implemented dynamic game mechanics and rules, utilizing **object-oriented programming**, and dynamic DOM manipulation
- Developed **unit test** modules and debugged reported issues to ensure a seamless gaming experience for users