

Chi (Charles) Le

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Education

Duke University, Pratt School of Engineering 2023/08 – 2025/05
Master of Engineering in Electrical and Computer Engineering Durham, NC

- Concentration: Software Development
- Core Course: Software Engineering, Systems Programming and Engineering, etc.

Zhejiang University, ZJU-UoE Institute 2019/09 – 2023/6
Bachelor of Science (Honours) in Biomedical Sciences Hangzhou, China

- Overall GPA 3.82/4.0, Junior Year Student Academic Representative
- Related Courses: Computer Organization, Cognition and Artificial Intelligence, Data Analysis and Machine Learning

Skills

Programming Languages: C/C++, Python, Java, Node.js, Verilog, R
Skills: LaTeX, HTML/CSS/JS, Linux, Git, Spring Boot, Pytorch, Django, Mathematica
Languages: Chinese Mandarin (Native), English (proficient)

Project & Internship Experience

Optimization of Query Performance in Distributed Database 2023/07 – 2023/09
CMU 15-445 Course Project

- **Buffer Pool Manager with LRU Replacer:** Designed and implemented a highly efficient Buffer Pool Manager, incorporating a Least Recently Used page replacement policy to optimize memory usage and data retrieval speed.
- **B+ Tree Index with Concurrency Support:** Developed a B+ Tree Index structure that provided concurrent support for insertions, deletions, and queries, ensuring data integrity and efficient access even in multi-user scenarios.
- **Lock Manager with Two-Phase Locking:** Implemented a sophisticated Lock Manager, employing the two-phase locking protocol to ensure data consistency and integrity while allowing multiple concurrent transactions to work in parallel.
- **Deadlock Detection:** Integrated a deadlock detection mechanism within the Lock Manager to identify and resolve potential deadlocks among concurrent transactions, minimizing system downtime and ensuring reliability.

Computer Networking Protocols and Systems Development 2023/05 – 2023/07
Stanford CS144 Course Project

- **TCP Protocol Reproduction:** Reproduced the Transmission Control Protocol, creating a robust networking protocol capable of effectively managing missing, duplicated, and out-of-order packets. The implementation also incorporated advanced flow control mechanisms, ensuring efficient and reliable data transfer.
- **Network Interfaces and ARP:** Developed network interfaces to facilitate data transmission and reception, enabling seamless communication within the network stack.
- **IP Router with Longest-Prefix-Match:** Implemented a highly efficient IP Router capable of routing IPv4 datagrams based on the longest-prefix-match algorithm. Leveraged a radix tree data structure to optimize routing lookup time complexity to $O(1)$, ensuring fast and scalable routing decisions.

Mini TikTok Backend Development 2023/01 – 2023/03
Backend Software Development Project, ByteDance Hangzhou, China

- **Static Source Server:** Employed Nginx, vsftpd, and ffmpeg for building a self-hosted static resource server.
- **Parallel Execution:** Applied Go's concurrency capabilities and internal task buffering using channels to support parallel execution of multiple tasks.

Similarity Search Web Application 2021/04 – 2022/10
Full Stack Software Intern, Zhejiang University Hangzhou, China

- **Web Development:** Constructed a search engine to store short tandem repeats information and identify different cell lines with Java under Spring Boot framework.
- **Algorithm Design:** Implemented and applied computational models to verify multiple short tandem repeats loci based on the whole genome sequencing database among 1000 Genomes Project.