Zhiyu Wu

Education Background

Zhejiang A&F University | Hangzhou, China 2020 – 2024

B.Eng | Computer Science and Technology | GPA 3.82 / 5.0 (top 9%)

Work Experience

Tsinghua University x Quancheng Laboratory

Research Internship in OS Kernel Development | Technology Stack: Rust, RISC-V ISA, x86_64 ISA

- Developed Rust-based Unikernel operating system, add and improve new syscall, enrich system functionality
- Participated in building ArceOS Unikernel, write related tests and documentation development.
- Expanded OS portability, ported Linux apps to ArceOS

Professional Experience

Qiao: DIY your routing protocol in Internet-of-things

Research Project (IEEE CSCWD 2024 accepted, in revision) | Technology Stack: Networks, Golang, Python

- Constructed the encapsulation layer network interface under the Linux platform, implements a set of unified API and provides an abstraction layer for unified access to operating system resources
- Implemented general routing processing library which contains multiple routing algorithms and supported standardized protocol parsing and processing
- Implemented RIPng, DHCPv6, ICMPv6 and other protocols, supported the construction, parsing and forwarding of data packets
- Supported protocol extensibility and optimized the concurrency of routing through Golang Routine

Relational Database BusTub

Personal Project | Technology Stack: DB, Storage, Optimization, C++

- Implemented page frame and cache pool page mapping through scalable hashing, implemented LRU-K algorithm for cache elimination
- Implemented concurrent B+ tree to achieve indexing, built disk-based storage engine
- Query engine using the volcano model, supported for simple SELECT, INSERT, DELETE, JOIN, AGG, SORT and other operators, the use of TOP-K optimized SORT + LIMIT execution

Extension of xv6 - UNIX-like operating system kernel

Personal project | Technology Stack: Kernel Development, RISC-V assembly, C Lang

Analyzed and expanded the xv6 kernel by reading its English manual and source code

- Captured the specific contents of the page table by tracking the registers under risc-v, and implemented system calls for tracking page table records and page hit records
- Used lazy allocation algorithm to realize memory allocation, reduced the overhead of system calls such as sbrk, fork and so on, and optimized system performance
- Implemented multi-threading at the user level and supported context switching and scheduling of threads

Awards

A, College student innovation and entrepreneurship training program project November 2023
2^{nd}, China College Student Computer Design Competition Jane 2023
Software copyright "Corn Digital Seed Testing System" Jane 2023
Several provincial government and school-level scholarships