Weichu Yang

No.2006, Xiyuan Ave, West Hi-Tech Zone, 611731
+86-13605778341 weichuyang777@gmail.com Linkedin Personal Website Github

Education

University of Electronic Science and Technology of China (UESTC) **Sep. 2020 – May 2024**
BEng in Computer Science and Technology *Chengdu, China*

- Major: Computer Science and Technology, Cumulative GPA: 3.93/4.00
- Awards: *Outstanding Student Scholarship of UESTC* (Thrice), *Game Security Scholarship of Tencent* (5th out of 120)

Research Experience

Host Co-operate SSD Filesystem **Feb. 2023 – present**
Supervisor: Dr. Li Lin
Designed and implemented a novel cooperative filesystem that optimizes I/O performance by coordinating between the host and emerging computing-capable SSD, especially in the case of disaggregated computing and storage resources.

- Proposed a collaborative solution that offloads certain filesystem operations from the host to the *SSD*, such as Path-Lookup and File-Mapping.
- Conducted a comprehensive comparative study on the state-of-the-art filesystems and proposed an innovative space layout management scheme meeting high concurrency requirements.
- Developed a highly adaptive logging system to ensure maximum reliability with minimal overhead for this filesystem.
- Customized and pruned an open-source *SSD* simulator to provide a simulation platform evaluating the performance of the computing-capable *SSD*.
- Conducted rigorous testing and analysis on the prototype demo extensively, demonstrating reduced write amplification and alleviated bus transmission pressure.

Internship Experience

Tencent Technology (Shenzhen) Co.Ltd **Jun. 2022 – Sep. 2022**
Intern Security Enginner *Shenzhen, China*

∗ Performed logical analysis towards more than 10 malicious software.
∗ Provided generally countermeasure recommendations.
∗ Developed a sample software based on those analysed malicious software.

Selected Projects

Development of a Bootstrap Lisp-like Functional Language Interpreter | *C, Lex, Yacc* **Apr. 2023 – Jun. 2023**

- Formulated a comprehensive set of syntactic and lexical rules and successfully implemented the parser and lexer.
- Implemented seven basic operators and enabled the definition and invocation of custom functions.
- Constructed a custom function that able to interpreter this language to achieve interpreter bootstrapping.

A Cluster Storage Engine and a Search Engine of Database | *C++* **Apr. 2022 – Jun. 2022**

- Designed and implemented a cluster storage engine and a *B+ Tree* based search engine of database.
- Conducted and successfully passed more than 500 unit tests, covering basic storage functionalities to large-scale data retrieval scenarios.
- Evaluated by a dataset of 10 million variable-length records, each averaging 8 bytes in size, and demonstrated the following performance metrics:
  ∗ Average search time per record: *0.04 ms*.
  ∗ Average insertion time per record: *12,931 ms*.

Heterogeneous Filesystem Based on Non-Volatile Memory | *C, C++* **Nov. 2021 – Oct. 2022**

- Proposed an innovative space layout management scheme that stores metadata on high-performance *NVM* and file data on *SSD* separately, reducing random Disk *I/O*.
- Devised a buffer solution that fully utilized *NVM* as write buffer, consolidating multiple write disk requests into a single sequential write request for enhanced write throughput.
- Implemented the prototype filesystem using Filesystem in Userspace*(FUSE)* and leveraged the Storage Performance Development Kit*(SPDK)* to drive the SSD while bypassing the kernel.

Skills

Programming Languages: C/C++, Python, Lisp, Haskell, SQL, Java
Developer Tools: VS Code, Git, Gdb, Vim, Visual Studio
Technologies/Frameworks: Linux, MPI, LaTeX, Lex&Yacc, CUDA C