Haixin Yu

name1e5s@qq.com · 151-0113-5718 · Hai-Hsin · blog.name1e5s.com

Education

Beijing University of Posts and Telecommunications, Master of Computer Technology 2021 – 2024

- Major: Computer Technology, *School of Computer Science*

Beijing University of Posts and Telecommunications, Bachelor's Degree 2017 – 2021

- Major: Computer Science and Technology , *School of Computer Science*, GPA: 3.50

Work Experience

ByteDance, Beijing, China 09/2021 – Now

(**Lark Cross Platform Infrastructure**) R&D Intern, Rust

- Worked with the infrastructure team to develop the cross-platform Rust client backend of Lark Messenger.
- Maintain *Secret Chat*, end-to-end encryption chat in Lark Messenger. Implemented and integrated a new protocol combined with an extended Diffie-Hellman and a double-ratchet algorithm, provides post-compromise security, forward secery and resilience for Secret Chat.
- Maintain storage component of Lark Messenger.
  - Developed *squam*, a SQL toolkit based on sqlite3 focused on binary size and performance. Comes with a better binary footprint compared to `diesel`.
  - Developed a asynchoronous sqlite connection pool for *squam*, gains a better throughput compared to `r2d2`.
  - Introduce type-checking mechanism for SQL queries to *squam*, which can help to find bugs at compile time.
  - Helped business teams to troubleshoot database related issues.
- Responsible for the stability of the Lark Messenger. Troubleshoot *panics* and *crashes*. Found bugs in `libunwind`, `rust std` and `darwin`.
- Refactored log upload module in Lark Messenger, improving code quality and readibility.

ByteDance, Beijing, China 04/2020 – 07/2020

(**Lark iOS**) R&D Intern, iOS

- Worked on fixing layout issues in i18n scenarios and other quality optimization projects.

Research Institute for Information Technology, Tsinghua University 10/2019 – 04/2020

(**NSLab**) Research Intern

- Explored the hardening of distributed graph database *nebula* with Intel SGX.
- Leveraged `avx2` to accelerate the aggregation step of federated learning with SGX.

Portfolios

- **Cecike**: A **out-of-order superscalar** RV64IMAC microprocessor core running on FPGA. Designed from scratch, the core can decode two instructions per cycle and execute four instructions per cycle. A GShare branch predictor is introduced to improve performance, and the final IPC is 1.6.
- **Muddy DNS**: A DNS relay server with DNS forwarding and bad website blocking, implemented in Go. Parsees DNS packet headers according to RFC 1035, and operates on the packet according to the result. Supports high concurrency.
- **SpinalHDL**: A new hardware description language for FPGA and ASIC design. Implemented two test backends for it, VCS and Xilinx Vivado, which are widely used in industry.

Honors and Awards

ByteDance 2022 Q3 **Spot Bonus** October 2022

First Prize of the Third National Student Computer System Capability Challenge August 2019

Skills

- **Programming Languages**: not limited to any specific language, but experienced in Rust/C/C++/Chisel, comfortable with Python/Swift/Go/Assembly.
- **Languages**: Passed CET-6, can handle daily communication and document reading in English.
- **Developing Tools**: experienced in Linux programming, have experience with collaboration tools like Git, etc.
- **Open-source Contributions**: contributed to **rust-lang/rust**, **SpinalHDL** etc.