Guanshujie Fu

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Portfolio | LinkedIn
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EDUCATIONS

ETH Zürich (ETHz) Zürich, Switzerland
M.S. in Information Technology and Electrical Engineering-ITET 2023.09 - Present
- Specialized in *Computers and Networks*

University of Illinois, Urbana Champaign (UIUC) Illinois, USA
B.S. in Computer Engineering-ECE (GPA: **3.85**/4.00) 2019.09 - 2023.06
- Graduated with *High Honors*, Dean's List (2020&2021&2022)

SKILLS

Programming: *C/C++, Go, Python, Java, Assembly, SystemVerilog, CUDA-C, HTML, JavaScript, RTL, P4, Haskell, MATLAB.*
Frameworks/Tools: *Docker, Kubernetes, Redis, CUDA/ROCm, Vitis/Vivado*
Cloud/Database: *AWS, GCP, Spark, Hadoop, MySQL, Milvus Vector Database*

EXPERIENCES

Software Engineer Intern | ABB Ltd | *Software Analysis, LLVM, C++, Python* 2024.03 - 2024.09
Supervisor: Philip Sommer, Balz Maag
- Working in S2 Group, I am focusing on program analysis with LLVM for automated C++ code data parallelization
- Implementing and optimizing *static analysis algorithm* for data flow and dependencies analysis on complex software
- Developed IDE extension with light-weight Language Server in C++ to support analysis in source code
- The tool has been applied in real development and CI/CD process at ABB, and will be open sourced for public use

Backend Engineer Intern | Hangzhou HouQi Tech Co. Ltd | *Cloud, Kubernetes, Docker, Redis, Golang, C++* 2023.03 - 2023.05
- Developed Golang-based vector operation APIs using Milvus, enabling fast processing of multiple concurrent requests
- Provided low-latency *unstructured data management* as a micro-service within a larger cloud platform framework
- Used Redis as intermediate storage in vector search to support *low latency ranking algorithm* for search results
- Developed a *RTSP* video stream pulling/pushing scheme capable of decoding and converting video data into OpenCV Mat format within 30ms. Integrated with a face detection algorithm for efficient processing

Undergraduate Researcher | UIUC, FAST Lab | *Near-Storage Computing, Xilinx FPGA, HLS, C++* 2022.02 - 2023.02
Advisor: Professor Nam Sung Kim
- Developed benchmark programs to assess SmartSSD performance across various targeted metrics in computer system
- Implemented and optimized *data compression algorithm* (Run Length Encoding and LZ77) using ***HLS C++*** in SmartSSD
- Provided asynchronous memory page compression mechanism for utilizing SmartSSD as a page cache expander
- Implemented *data-intensive* database key value filter applications using ***HLS*** stream data and ***C++*** to SmartSSD

Research Assistantship | National University of Singapore | *DPU, TCP/IP, C++* 2022.08 - 2022.11
Advisor: Professor Jialin Li
- Designed and implemented network application on *NVIDIA BlueField-2 DPU* with *DOCA Flow* hardware acceleration
- Explored the potential of offloading partial TCP stack operations from Host operating system to *DPU* based on DOCA Flow framework, and proposed potential offloading scheme and made presentations to industry R&D group

PROJECTS

Distributed Machine Learning Model in Adversarial Network | ETHz 2024.09 - Present
- Set up the pipeline to train popular models over custom datasets in a distributed fashion
- Adding hooks to manipulate network parameters and traffic for model convergence analysis and benchmark

LLM Models Training on Distributed Fashion | ETHz 2024.09 - Present
- Performance modeling and optimizing on the existing transformers-based architecture
- Designing distributed algorithms for training state-of-art LLM models on distributed fashion
- Analyzing distributed framework performance to inspect potential optimization schemes

Full-Stack Website Development [Repo] | UIUC 2022.06 - 2022.08
- Worked in a team to develop a full stack website for movie dataset collection and user bias recommendation
- Used ***HTML*** and ***JavaScript*** to design and construct web pages, Python-based **Flask** to render web pages
- Used ***MySQL*** to manage backend large-scale movie dataset and ***Google Cloud Platform*** to deploy website

Unix-like OS Kernel Design [Repo] | UIUC 2022.03 - 2022.05
- Led a team to design and implement an OS kernel resembling Linux with basic and advanced features in ***C*** and ***Assembly***
- The kernel includes file system, virtual memory, process management & scheduling, interrupts & exceptions and etc.
- Designed a high-resolution (60fps, 800*600 resolution) graphic user interface with standard VGA capable