lichendi.cs@gmail.com

Chendi Li

Personal website:
https://www.chendi.gq

I am currently a graduate student at the State Key Laboratory of Computer Architecture, Institute of Computing Technology, Chinese Academy of Sciences, supervised by Prof. **Yunquan Zhang**. My research interests include high-performance computing, sparse/dense matrix multiplication and AI+HPC.

Education

Master of Computer Science, Institute of Computing Technology, Chinese Academy of Sciences **Sep 2019 — expected June 2022**

Bachelor of Computer Science, Hunan Agricultural University **Sep 2014 — June 2018**

Research Experiences

Graduate Student Research Assistant **Sep 2019 — Present**
State Key Laboratory of Computer Architecture, Institute of Computing Technology, Chinese Academy of Sciences

Undergraduate Research Assistant **Jan 2018 — June 2019**
State Key Laboratory of Computer Architecture, Institute of Computing Technology, Chinese Academy of Sciences

Publications

1. **[IEEE ISPA 2021] Chendi Li**, Haipeng Jia, Hang Cao, et al. AutoTSMM: An Auto-tuning Framework for Building High-Performance Tall-and-Skinny Matrix-Matrix Multiplication on CPUs
2. **[IEEE ICPADS 2021]** Jianyu Yao, Boqian Shi, Chunyang Xiang, Haipeng Jia, **Chendi Li**, et al. IAAT: An Input-Aware Adaptive Tuning framework for Small GEMM(accepted)
3. **[IEEE HPCC 2021]** Tun Chen, Haipeng Jia, Zhihao Li, **Chendi Li**, et al. A Transpose-free Three-dimensional FFT Algorithm on ARM CPUs(accepted)
4. **[CCF HPC China 2020] Chendi Li**, Guangting Zhang, Haipeng Jia. Fast Computation of Elementary Functions on ARM Platforms(in Chinese)

Research Projects

AutoTSMM, Author **Nov 2020 — Present**
- Designed AutoTSMM, which is used to build high-performance tall-and-skinny matrix multiplication on mainstream CPUs. AutoTSMM can speed up convolution layers in real-world deep learning applications, and the performance is competitive with Intel OneMKL and outperforms all conventional GEMM implementations. This work was published in IEEE ISPA 2021.

OpenBLAS, Contributor **Nov 2020 — Present**
- Optimized pre-pack matrix-matrix multiplication and triangular solve with multiple right-hand-sides(TRSM) on ARMv8 and X86 platforms. OpenBLAS is one of the most famous open-source BLAS libraries.

IAAT, Contributor **Nov 2020 — Present**
- Launched the project and investigated JIT tools for small GEMM. IAAT is a template-driven just-in-time(JIT) small GEMM framework targeting CPUs. This work was accepted by IEEE ICPADS 2021.

AutoFFT, Contributor **Jan 2018 — Present**
- Optimized small-scale FFT, and contributed to multi-threading and 2D-FFT. AutoFFT is a template-based FFT codes auto-generation framework that contributes to many Chinese vendors' libraries. This work was published in SC'19, TPDS'20, and HPCC'21.

OpenVML, Co-author **Jan 2020 — Oct 2020**
- Enhanced the math functions by manipulating IEEE 754 floating points. OpenVML is a vector mathematical library. It achieves an outstanding performance improvement compared to C standard library and ARMPL. This work was accepted by HPC China 2020.

Awards & Honors

2021 First-class scholarships
2020 Second-class scholarship
2019 Third-class scholarship, Outstanding intern in PerfXLab
2015 Collegiate programming contest first prize; Outstanding volunteer

Technical Skills

Tools Linux, Git, Vim, CMake, GDB, OpenMP, Pthreads
Programming/Scripting C, Latex, Assembly, Python, Neon intrinsic