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Chendi Li

looking for a Ph.D. program

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- I am currently a graduate student at the State Key Laboratory of Computer Architecture, Institute of Computing Technology, Chinese Academy of Sciences (CARCH, ICT, CAS), supervised by Prof. Yunquan Zhang.
- Research Interests: High Performance Computing, Optimized BLAS Library, Automatic Performance Tuning, Sparse Matrix Multiplication.
- Expected Graduation Date: 2022

Education

Master of Computer Science, University of Chinese Academy of Sciences — **Mon 2019 — June 2022**
Bachelor of Computer Science, Hunan Agricultural University — **Sep 2014 — June 2018**

Experience

Graduate Student Research Assistant — **September 2019 — Now**
Institute of Computing Technology, Chinese Academy of Sciences — Beijing

Undergraduate Research Assistant — **January 2018 — June 2019**
Institute of Computing Technology, Chinese Academy of Sciences — Beijing

Publications

1. **Li**, **C.**, Jia, H., Cao, H., *et al.* AutoTSMM: An Auto-tuning Framework for Building High-Performance Tall-and-Skinny Matrix-Matrix Multiplication on CPUs. *IEEE ISPA* (2021, New York).
2. **Li**, **C.**, Zhang, G. & Jia, H. Fast Computation Elementary Functions on ARM Platforms(in Chinese). *Under review.*

Projects

AutoTSMM, Author — **Nov 2020 — Now**
- I designed an auto-tuning framework, AutoTSMM, for building high-Performance tall-and-skinny matrix multiplication on all mainstream CPUs. And the performance is competitive with state-of-the-art TSMM implementation from Intel MKL and outperforms all conventional GEMM implementations on X86 and ARMv8 platforms. AutoTSMM was accepted by IEEE ISPA 2021.

OpenBLAS, Contributor — **Nov 2020 — Now**
- OpenBLAS is an open-source BLAS library. I'm responsible for optimizing pre-pack matrix-matrix multiplication and triangular solve with multiple right-hand-sides(TRSM) on ARMv8 and X86 platforms.

OpenVML, Co-author — **Jan 2020 — Oct 2020**
- OpenVML is a vector math library. I'm responsible for optimizing the math functions on ARMv8 architecture. The experimental results show that on Kunpeng 920, the high-performance algorithm and optimization we proposed not only meet the calculation accuracy, but also achieve a performance improvement of 66% to 540% compared with C standard library function, and a performance improvement of 12% to 90% compared with Arm Performance Libraries(ARMPL). The paper of OpenVML is still under review.

AutoFFT, Contributor — **Jan 2018 — June 2019**
- I'm responsible for optimizing small-scale FFT on ARMv8 architecture. I write small-scale inline assembly. AutoFFT is the first project I participated in, and I learned a lot from it. AutoFFT published in SC19.

Patents

A run-time auto-tune method for non-regular-shaped matrix-matrix multiplication, Co-author — **2021**
- This patent solves the poor performance caused by the excessively high ratio of the packing operation and the inability to reuse the data when the traditional general matrix-matrix multiplication calculates non-regular-shaped matrices.

Technical Skills

Tools	Linux, Git, Vim, CMake, OpenMP, Pthreads
Skills	High Performance Computing, Parallel Programming
Programming/Scripting	C, Latex, Assembly, Python, JavaScript, Neon intrinsic