Feiyang Zheng

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Education

North Carolina State University — Raleigh, NC
Doctoral Degree in Computer Science — *Aug 2025 – Present*

Southern University of Science and Technology — Shenzhen, China
Bachelor of Science in Mathematics — *Sep 2021 – Jun 2025*

Experience

Graduate Research Assistant — Aug 2025 – Present
North Carolina State University — *Raleigh, NC*

- Working on developing new floating point number compression schemes under the supervision of Dr. Frank Mueller and Dr. Xipeng Shen.
- Working on developing Sparse Tensor Library using C++ under the supervision of Dr. Jiajia Li.

Research Assistant — Sep 2024 – Jun 2025
Southern University of Science and Technology — *Shenzhen, China*

- Using LibTorch to construct deep learning package for unknown equation modeling.
- Using CMake to structure the library and manage dependencies like CUDA and yaml-cpp
- Constructing C++ templates for learning models for easy secondary development.

Projects & Publications

ASC 22-23 | *Python, Tensorflow, DeepMD, Horovod, Spack* — 2022 – 2023

- Training DeepMD, a deep learning-based model of interatomic potential energy and force field, and to perform molecular dynamics.
- Setting up a server with 4 nodes and 8 A100-96G-SXM4 from scratch.
- Using Spack and Conda to configure training environment.
- Using Tensorflow profiler to spot potential improvements.
- First prize in the ASC 22-23First Prize Winner and Group Competition Awardee of ASC 22-23 Final.

APAC 2023 HPC-AI Competition | *Python, Pytorch, Nsight* — June 2020 – Present

- Accelerating BigScience Large Open-science Open-access Multilingual Language Model (BLOOM)LLM inference in the Competition
- Enabling parallel computing on multi nodes
- Using Nsight and Torch profiler to spot inefficiency
- Second Place winner of APAC 2023 HPC-AI Competition.

GECCO 25 | *C++, Matlab, Random Analysis* — Sep 2024 – Feb 2025

- Co-author of Hybrid Selection Allows Steady-State Evolutionary Algorithms to Control the Selective Pressure in Multimodal Optimisation.
- Published on Genetic and Evolutionary Computation Conference.
- Developed a hybrid selection mechanism to accelerate escape from local optima and better control selective pressure in multimodal fitness landscapes.
- Used C++ to run experiments for verification and Matlab to visualize the result.

GEMM Inplementations | *C++, CUDA, OPENMP, SIMD, cuBlas, vTune* — Feb 2024 – July 2024

- Inplementing GEMM with C++ from the scartch.
- Using OpenMP and SIMD to implement CPU version, use vTune to analysis performance bottleneck.
- Using CUDA and OPENMP to implement hand written GEMM and compare the performance with corresponding cuBlas kernels.

Technical Skills

Languages: C/C++, Python, Java, Matlab, SQL (Postgres)
Developer Tools: Git, Docker, VS Code, Spack
Profiling Tools: Nsight, VTune, Tensorflow Profiler
Libraries: Torch, CUDA, cuBlas,