Jianhua Gao

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PROFESSIONAL PROFILE

- Highly self-motivated **Ph.D.** student, strong interpersonal skill with a good sense of teamwork
- Programming skills: C/C++, Python, CUDA, and Linux Shell
- Rich programming and practical work experience in Linux System
- Rich research experience in sparse matrix computing optimization and GPU acceleration
- Proficient work experience in popular parallel frameworks such as MPI, OpenMP, and OpenACC.

RESEARCH INTEREST

- Optimization of sparse matrix computation, especially sparse matrix-vector multiplication (SpMV) and general sparse matrix-sparse matrix multiplication (SpGEMM)
- GPU acceleration and optimization
- Parallel computing, high performance computing

EDUCATION

06/2017-07/2023	**Beijing Institute of Technology, Beijing, China** Ph.D. in Computer Science and Technology **Supervisor**: Feng Shi, Weixing Ji **Thesis**: Optimization of sparse matrix-vector multiplication based on data distribution characteristics
09/2013-07/2017	**Taiyuan University of Technology, Taiyuan, China** Bachelor in Information and Computer Science **Rank: 3/103**

PUBLICATIONS

1. **Gao J**, Ji W, Tan Z, et al. TaiChi: A Hybrid Compression Format for Binary Sparse Matrix-Vector Multiplication on GPU, IEEE Transactions on Parallel and Distributed Systems, 2022.4, vol. 33, no. 12, pp. 3732-3745.
2. **Gao J**, Ji W, Guo S, et al. Revisiting Thread Configuration of SpMV Kernels on GPU: A Machine Learning Based Approach (*The manuscript of this work has been submitted to PPoPP 2023*).
3. **Gao J**, Ji W, Chang F, et al. A Systematic Survey of General Sparse Matrix-Matrix Multiplication (*Major revision of this work has been submitted to the Journal of ACM Computing Surveys*).
4. **Gao J**, Ji W, Zhang L, et al. Cube-Based Incremental Outlier Detection for Streaming Computing, Information Sciences, 2020.5, vol. 517, pp. 361-376.
5. **Gao J**, Ji W, Zhang L, et al. Fast Piecewise Polynomial Fitting of Time-Series Data for Streaming Computing, IEEE Access, 2020.2, vol. 8, pp. 43764-43775.
6. **Gao J**, Ji W, Liu J, Shao S, Wang Y, Shi F, AMF-CSR: Adaptive Multi-Row Folding of CSR for SpMV on GPU, ICPADS, 2021, pp. 418-425.

7. Tan Z, Ji W, **Gao J**, et al. MMSparse: 2D Partitioning of Sparse Matrix Based on Mathematical Morphology, Future Generation Computer Systems, 2020.7, vol. 108, pp. 521-532;
8. Shao S, Wang Y, Ji W, **Gao J**. Towards Optimal Fast Matrix Multiplication on CPU-GPU Platforms, International Conference on Parallel and Distributed Computing: Applications and Technologies, 2021, pp. 223-236.

PROFESSIONAL EXPERIENCE

11/2021-08/2021

Research Intern, Alibaba Infrastructure, Beijing, China

- Investigate the existing mobile deep learning inference framework
- Analyze their advantages and disadvantages
- Implement a basic deep learning inference framework
- Propose innovative improvement methods

09/2016-05/2017

Research Intern, Computer Network Information Center, Chinese Academy of Sciences, Beijing, China

- Investigate the typical process of image characters recognition using deep neural network
- Given a handwritten Tibetan data set, use a DNN model for training and inference
- Adjust the model and parameters to achieve the highest accuracy

AWARDS & HONORS

Postgraduate period

- 2018, First Prize in competition area, China Parallel Application Challenge on Domestic CPU, *China Computer Federation*
- 2019/2021, Second-Class Academic Scholarship, *Beijing Institute of Technology*
- 2020, China Century Group Scholarship, *Beijing Institute of Technology*
- 2020, Outstanding Academic Scholarship, *Beijing Institute of Technology*
- 2020, Outstanding Student, *Beijing Institute of Technology*
- 2021, Second prize, 2021 CCF Computing Intelligence Contest, *China Computer Federation*

Undergraduate period

- 2014-2016, Professional Study Scholarships for three consecutive years, *Taiyuan University of Technology*
- 2016, National Encouragement Scholarship, *Ministry of Education of the People's Republic of China*
- 2016, Prize of Excellence (17th/175), *Asia Supercomputer Community*

VOLUNTARY WORK

- Volunteer of the 2015 ASC Student Supercomputer Challenge
- Volunteer of the 2022 ChinaSys Workshop.