Cao Gao

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Summary

I am interested in computer architecture, performance analysis, mobile systems and machine learning in general. Currently working on designing mobile architecture for future machine learning algorithms.

Education

- *University of Michigan, Ann Arbor, MI* *2012.9 – 2017.5 (expected)*
  PhD, Computer Science and Engineering (Hardware) Advisor: Prof. Trevor Mudge
  M.S, Computer Science and Engineering Overall GPA: 4.0/4.0
- *Zhejiang University, Hangzhou, Zhejiang, China* *2008.9 – 2012.6*
  BEng, Major: Electronic and Information Engineering Minor: English
  Member of Chu Kochen Honors College Overall GPA: 3.91/4.0

Professional Experience

- ***ARM Ltd.,*** *Austin, TX* *2014.6 – 2014.8*
  R&D Intern at the Mobile System Group

Major Projects

- An ultra-low power non-uniform memory accelerator for wearable devices
  Design an ultra-low power accelerator for wearable device applications such as keyword spotting
  Develop the overall architecture, ISA, and compiler for the accelerator, participate in chip fabrication
- Graph analytics processing accelerator
  Design an accelerator architecture for billion-edge scale graph applications
  Lead four graduate students to characterize graph applications, explore algorithms and architecture choices
- Accelerating deep learning algorithms on mobile platforms
  Analyze the characteristics of *Deep Neural Network* workloads on mobile / server GPUs
  Participate in designing an offloading scheme from mobile to server that achieves optimal trade-off
- User quality-of-experience metrics for Android applications
  Develop a set of user responsiveness and experience metrics for a set of Android applications
  Implement a framework to automate workload execution and metrics collection
- A study of mobile device utilization
  Analyze the CPU and GPU utilization of a wide range of commonly used mobile applications
  Demonstrate the diminishing returns of increasing core counts and suggest a more flexible system

Selected Publications

- S. Bang, J. Wang, Z. Li, C. Gao, Y. Kim, et.al. *A 288μW Programmable Deep Learning Processor with 270kB On-chip Weight Storage Using Non-uniform Memory Hierarchy for Mobile Intelligence.* ISSCC, February 2017.
- Q. Zheng, C. Gao, T. Mudge, and R.G. Dreslinski. *Leveraging Mobile GPUs for Flexible High-speed Wireless Communication.* The 3rd International Workshop on Parallelism in Mobile Platforms (PRISM-3), June 2015.
- C. Gao, A. Gutierrez, M. Rajan, R.G. Dreslinski, T. Mudge, and C.J. Wu. *A Study of Mobile Device Utilization*. 2015 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS), March 2015.

Skills

Programming: experienced in C/C++, Python, CUDA, familiar with Verilog, Matlab, Java
Environments: Linux, Android, shell scripting, git, ARM streamline, Keil uVision, nvprof, Caffe
Languages: Fluent in English, native Mandarin speaker