Fei Gao

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Engineering Quadrangle J301, 41 Olden St, Princeton, NJ 08544

Education

Ph.D. Candidate in Electrical Engineering *5/2019 - Present*
Princeton University, Princeton, NJ, USA
Advisor: Prof. David Wentzlaff

M.S. in Electrical Engineering *9/2017 - 5/2019*
Princeton University, Princeton, NJ, USA

B.S. in Microelectronics *9/2013 - 7/2017*
Tsinghua University, Beijing, China
Rank: 2/25, GPA: 94.1/100
Minor in Business Administration

Publications

Jonathan Balkind, Ting-Jung Chang, Paul J. Jackson, Georgios Tziantzioulis, Ang Li, **Fei Gao**, Alexey Lavrov, Grigory Chirkov, Jinzheng Tu, Mohammad Shahrad, and David Wentzlaff, **"OpenPiton at 5: A Nexus for Open and Agile Hardware Design"**, IEEE Micro, July-August 2020, pp. 22-31, vol. 40.

Jonathan Balkind, Katie Lim, Michael Schaffner, **Fei Gao**, Grigory Chirkov, Ang Li, Alexey Lavrov, Tri M. Nguyen, Yaosheng Fu, Florian Zaruba, Kunal Gulati, Luca Benini, and David Wentzlaff, **"BYOC: A "Bring Your Own Core" Framework for Heterogeneous-ISA Research"**, In Proceedings of the Twenty-Fifth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS20), March 2020, Lausanne, Switzerland.

Fei Gao, Georgios Tziantzioulis, and David Wentzlaff, **"ComputeDRAM: In-Memory Compute Using Off-the-Shelf DRAMs"**, In Proceedings of the 52nd International Symposium on Microarchitecture (MICRO-52), October 2019, Columbus, Ohio, USA. (**Honorable Mention in IEEE Micro Top Picks 2020**)

Jonathan Balkind, Michael Schaffner, Katie Lim, Florian Zaruba, **Fei Gao**, Jinzheng Tu, David Wentzlaff, and Luca Benini, **"OpenPiton+Ariane: The First Open-Source, SMP Linux-booting RISC-V System Scaling From One to Many Cores"**, presented at the Workshops at Third Workshop on Computer Architecture Research with RISC-V (CARRV'19), June 2019, Phoenix, AZ, USA.

Research Experience & Selected Course Projects

Tape-out a heterogeneous 8-core-plus-FPGA chip with 12nm process *6/2020 - 10/2020*
Core member in the back-end team, also taking charge of the cache system and network-on-chip.
Supervised by Prof. David Wentzlaff

In-Memory Compute Using Off-the-Shelf DRAMs *7/2018 - Present*
First work demonstrating computation with unmodified commercial DRAMs.
Supervised by Prof. David Wentzlaff

RISC-V Atomic Operation Support to OpenPiton Many-Core Processor *4/2019 - 5/2019*
Supervised by Prof. David Wentzlaff

Evaluate Different Cache Replacement Policies with OpenPiton *3/2018 - 5/2018*
Supervised by Prof. David Wentzlaff

Implementation and Evaluation of An In-Cache Hardware Transactional Memory Based on OpenPiton *12/2017 - 2/2018*

Supervised by Prof. David Wentzlaff

Parallel Markov Chain Monte Carlo(MCMC) Sampling Architecture for Bayesian Learning *7/2017 - 10/2016*
Supervised by Prof. Yangdong Deng

Accelerator for Sparse Matrix Computing *7/2016 - 9/2016*
Supervised by Prof. Trevor Mudge

Dedicated Processor for Spiking Neural Networks(SNN) *5/2016 - 9/2015*
Supervised by Prof. Yangdong Deng

GPU Acceleration for Light-Field Reconstruction *7/2015 - 9/2015*
Supervised by Prof. Yangdong Deng

Teachings & Tutorials

"OpenPiton with RISC-V Cores: A Hands-On Tutorial with the Open Source Manycore Processor" *10/2019*
Tutorial in MICRO-52, Columbus, Ohio.

"OpenPiton+Ariane: The RISC-V Hardware Research Platform" *6/2019*
Tutorial in ISCA/FCRC 2019, Phoenix, Arizona.

"OpenPiton+Ariane: The RISC-V Hardware Research Platform" *6/2019*
Tutorial in Week of Open Source Hardware, ETH Zurich, Switzerland.

ELE/COS 475 Computer Architecture *fall 2018*
Teaching Assistant, Princeton University

Awards & Honors

Yan Huo *94 Graduate Fellowship in Electrical Engineering *9/2019*

TP-LINK Scholarship *10/2016*

Scholarship of Academic Excellence, Tsinghua University *2014, 2015*

First Prize of the 31st National Undergrad. Physics Contest *12/2014*

Professional Skills

Language: Native Speaker of Mandarin, English.

Programming: C/C++, Verilog HDL, Matlab, Python, LaTeX, bash, tcl, CUDA.