Yuanlong Li

Ph.D. Candidate

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Research Interests

I am broadly interested in systems and cross-stack research problems in modern, large-scale datacenters. More specifically, my research focuses on designing high-performance and secure Function-as-a-Service (FaaS) systems in datacenters. I am one of the main PhD students in the Intel-funded project Midgard.

Education

- **École Polytechnique Fédérale de Lausanne (EPFL)** *09/2020 - Present*
  - Doctor of Philosophy in Computer Science
  - Advisor: Prof. Babak Falsafi
- **Harbin Institute of Technology (HIT)** *09/2014 - 07/2016*
  - Master of Science in Particle and Nuclear Physics
  - Advisor: Prof. Jingbo Zhang
- **Harbin Institute of Technology (HIT)** *09/2010 - 07/2014*
  - Bachelor of Engineering in Electronics Engineering
  - Advisor: Prof. Fangfa Fu

Publications

- **Single-Address-Space FaaS with Jord** *ISCA'25*
  - Rearchitecting FaaS with a single-address-space design
  - **Y. Li**, A. Bhattacharyya, M. Kumar, A. Bhattacharjee, Y. Etsion, B. Falsafi, S. Kashyap, and M. Payer
- **Imprecise Store Exceptions** *ISCA'23*
  - Handling exceptions generated by logic embedded in the cache/memory hierarchy
  - S. Gupta*, **Y. Li***, Q. Kang, A. Bhattacharjee, B. Falsafi, Y. Oh, and M. Payer
- **SecureCells: A Secure Compartmentalized Architecture** *IEEE S&P'23*
  - Compartmentalization with ns-scale operations using hardware support
  - A. Bhattacharyya, F. Hofhammer, **Y. Li**, S. Gupta, A. Sanchez, B. Falsafi, and M. Payer
- **QFlex 3.0: Fast and Accurate ARM Server Simulation** *AGPC'25*
  - The next version of QFlex simulator with sampling methodology
  - S. Lin, A. Ansari, A. Chakraborty, B. Eryilmaz, **Y. Li**, M. Alian, and B. Falsafi
- **Rethinking IOMMU for Future IO Devices** *YArch'25*
  - Eliminating address translation overheads from IO
  - M. Kumar, **Y. Li**, Y. Etsion, A. Bhattacharjee, A. Basu, B. Falsafi, S. Kashyap, and M. Payer

Awards

- **EPFL EDIC fellowship** *2020*
- **Graduate First-class Academic Scholarship** *2015*
- **National Encouragement Scholarship** *2013*
- **National Encouragement Scholarship** *2011*

Work Experience

- **SiFive China, Inc.** *02/2020 - 09/2020*
  - Senior Engineer
  - Designer of Load/Store Unit (LSU) and L2 cache controller (L2C) of SiFive China's first server CPU
- **Arm China, Inc.** *05/2019 - 01/2020*
  - Engineer
  - Designer of the cryptographic co-processor for ARMv8-M CPUs
- **Unisoc, Inc.** *07/2016 - 05/2019*
  - Advanced Senior ASIC Design Engineer
  - Designer of L1/L2 TLBs of Unisoc's second CPU
  - Full-system verification and post-silicon validation of Unisoc's CPUs

Teaching Experience

- Parallelism and Concurrency in Software *Prof. Arkaprava Basu and Prof. Babak Falsafi*
- Introduction to Multiprocessor Architecture *Prof. Babak Falsafi*
- Computer Architecture *Dr. Mirjana Stojilovic*

Projects

- **QFlex**
  - https://github.com/parsa-epfl/qflex
  - A family of quick, accurate, and flexible simulators of multi-node computer systems built on QEMU/Flexus
- **SecureCells on RocketChip**
  - https://github.com/HexHive/seccell-rocket
  - Hardware implementation of SecureCells on RocketChip
- **Midgard**
  - https://github.com/goshuh/midgard
  - Hardware implementation of Midgard/Jord
- **Midgard on OpenXiangShan**
  - https://github.com/goshuh/midgard_xiangshan
  - Integration of Midgard/Jord and OpenXiangShan
- **Midgard Linux**
  - https://github.com/parsa-epfl/midgard_linux
  - Linux port of Midgard/Jord
- **XiangShan over FireSim**
  - https://github.com/parsa-epfl/xsofs
  - Running OpenXiangShan over FireSim