Zhuoran Zhao

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Summary

I am a PhD student at the University of Texas at Austin actively seeking full-time position in **Operating System, Compiler** and **Computer Architecture**. My research interests are computer system simulation and performance optimization across full system stack with an emphasis in embedded and mobile domains.

Skills

- **Programming languages**: C/C++, Python and Java
- **Tools and frameworks**: LLVM, Caffe2, Darknet, OMNeT++, lwIP.
- Project experiences with operating system kernel programming, multi-threaded programming (POSIX pthreads) and network programming (Socket Programming in C).

Education

- **Ph.D. in Electrical and Computer Engineering;** Dec. 2015 – May. 2019
  University of Texas at Austin; *Austin, Texas*
  Advisor: Prof. Andreas Gerstlauer
- **M.S. in Electrical and Computer Engineering;** Aug. 2012 – May. 2015
  University of Texas at Austin; GPA: 3.93/4.00 *Austin, Texas*
- **B.S. in Electrical Engineering;** Aug. 2008 – June. 2012
  Zhejiang University; GPA: 3.95/4.00 *Zhejiang, China*
  Honored Minor: Advanced Honor Class of Engineering Education (ACEE)

Experience

- **University of Texas at Austin** Austin, Texas
  Graduate Research Assistant *Jan 2013 - Present*
  - **DeepThings**: A portable and lightweight runtime framework for locally distributed CNN/DNN inference in resource-constrained IoT edge clusters, developed in C [1].
  - **NoSSim**: A source-level network/system co-simulation framework for rapid embedded/mobile system prototyping, developed in C++ with LLVM, OMNeT++ and SystemC framework [2].
  - **HCSim**: A fast full-system simulation platform with abstract models of real-time operating systems (RTOS) and high-level multi-core processor models, developed in C++ with SystemC framework [2].
  - **RBA**: A compile-time profiling and instrumentation tool for source-level system performance evaluation, developed in C++ and python with gcc and LLVM framework [3].
- **FutureWei Technologies** Plano, Texas
  Research Intern *Jun 2014 - Aug 2014*
  Manager: Weizhong Chen
  - Architectural Description Language (ADL) framework prototype for digital signal processors (DSP), developed in C++ and Python.
- **NXP Semiconductors** Austin, Texas
  Research Intern *Jun 2013 - Aug 2013*
  Manager: Mark Bader
  - Automatic microprocessor performance calibration framework between RTL and cycle-accurate simulator, developed in C++ with ADL/uADL framework.
- **University of California, Los Angeles** Austin, Texas
  Research Intern *Jun 2011 - Aug 2011*
  Advisor: Prof. Vwani P. Roychowdhury
  - Interactive complex network visualization in mobile applications and browsers, developed in JavaScript, Java and Python with AJAX technique and Django framework.

Selected Publications

[1] Zhuoran Zhao, K. Mirzazad and A. Gerstlauer, **"DeepThings: Distributed Adaptive Deep Learning Inference on Resource-Constrained IoT Edge Clusters,"** *CODES+ISSS, special issue of IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2018.*

[2] Zhuoran Zhao, V. Tsoutsouras, D. Soudris, A. Gerstlauer, **"Network/System Co-Simulation for Design Space Exploration of IoT Applications,"** *Proceedings of the International Conference on Embedded Computer Systems: Architectures, Modeling and Simulation (SAMOS), 2017.*

[3] Zhuoran Zhao, A. Gerstlauer and Lizy K. John, **"Source-Level Performance, Energy, Reliability, Power and Thermal (PERPT) Simulation,"** *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2017.*

[4] Zhuoran Zhao, D. Lee and A. Gerstlauer, **"Host-Compiled Reliability Modeling for Fast Estimation of Architectural Vulnerabilities,"** *In Silicon Errors in Logic, System Effects Workshop (SELSE), 2015*

[5] S. Chakravarty, Zhuoran Zhao, A. Gerstlauer, **"Automated, Retargetable Back-Annotation for Host-Compiled Performance and Power Modeling,"** *Proceedings of the IEEE/ACM/IFIP International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS), 2013.*

[6] L. Guckert, M. O'Connor, S. K. Ravindranath, Zhuoran Zhao and V. J. Reddi, **"A Case for Persistent Caching of Compiled JavaScript Code in Mobile Web Browsers,"** *In Workshop On Architectural And Microarchitectural Support For Binary Translation (AMAS-BT), 2013*

Relevant Graduate Coursework

- EE382V Dynamic Compilation
- EE382V Advanced Programming Tools
- EE380L Engineering Programming Languages
- EE382C Multicore Computing
- EE382N Computer Architecture
- EE382N Embedded System Design and Modeling
- EE382M System-on-a-Chip Design

Professional Service

- **Reviewer:**
  - IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2017
  - Design, Automation and Test in Europe (DATE) Conference, 2018
  - IEEE/ACM/IFIP International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS), 2018
- **Teaching:**
  - Teaching Assistant: EE382N Embedded System Design and Modeling, 2016
  - Teaching Assistant: EE319K Introduction to Embedded System, 2012

Honors and Awards

- Best in Session Award for the presentation "Automated, Retargetable Back-Annotation for Host-Compiled Power and Performance Modeling," in Semiconductor Research Corporation (SRC) TECHCON, Sep 11, 2013
- National Scholarship in China (2%), 2009, 2010