Welcome to Dr. Tao Li's Homepage

Tao Li, IEEE Fellow

Associate Editor-in-Chief, IEEE Transactions on Computers

Professor (Preeminence Professorship, First Round)

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Dr. Tao Li is a full professor (with preeminence professorship) in the Department of Electrical and Computer Engineering at the University of Florida. He received a Ph.D. in Computer Engineering from the University of Texas at Austin. His research interests include computer architecture, microprocessor/memory/storage system design, virtualization technologies, energy-efficient/sustainable/ dependable data center, cloud/big data computing platforms, the impacts of emerging technologies/applications on computing, and evaluation of computer systems. Dr. Tao Li received 2009 National Science Foundation Faculty Early CAREER Award, 2008, 2007, 2006 IBM Faculty Awards, 2008 Microsoft Research Safe and Scalable Multi-core Computing Award and 2006 Microsoft Research Trustworthy Computing Curriculum Award. Dr. Tao Li co-authored two papers that won the Best Paper Awards in ICCD 2016, HPCA 2011 and seven papers that were nominated for the Best Paper Awards in HPCA 2018, HPCA 2017, ICPP 2015, CGO 2014, DSN 2011, MICRO 2008 and MASCOTS 2006. He is listed in the HPCA Hall of Fame and MICRO Hall of Fame. Dr. Tao Li is one of the College of Engineering winners, University of Florida Doctor Dissertation Advisor/Mentoring Award for 2013-2014 and 2011-2012.

Dr. Tao Li served as a CISE program director in the National Science Foundation (NSF) during 2015-2017, directing the national research agenda in computer & system architecture, including core programs for Software and Hardware Foundation (SHF), Exploiting Parallelism

and Scalability (XPS), Scalable Parallelismin the Extreme (SPX), CISE Research Infrastructure (CRI), Faculty Early CAREER Development (CAREER), CISE Research Initiation Initiative (CRII), and Expeditions in Computing (EIC) programs. Dr. Tao Li is the Associate Editor-In-Chief (AEIC) of IEEE Transactions on Computers and an Associate Editor of IEEE Micro. He is an IEEE Fellow.

Research Sponsors

- Facebook
- IBM
- Microsoft Research
- NASA/Florida Space Grant Consortium
- National Science Foundation
- Semiconductor Research Corporation

Select Publications

- Eager Pruning: Algorithm and Architecture Support for Fast Training of Deep Neural Networks, **ISCA** 2019.
- 3D-based Video Understanding Acceleration by Leveraging Temporal Locality and Activation Sparsity, **ISCA** 2019.
- LerGAN: A Zero-free, Low Data Movement and PIM-based GAN Architecture, **MICRO** 2018.
- Prediction based Execution on Deep Neural Networks, **ISCA** 2018.
- Exploiting Dynamic Thermal Energy Harvesting for Reusing in Smartphone with Mobile Applications, **ASPLOS** 2018.
- Enabling Efficient Network Service Function Chain Deployment on Heterogeneous Server Platform, **HPCA** 2018 (**Best Paper Candidate**).
- In- situ AI: Towards Autonomous and Incremental Deep Learning for IoT Systems, **HPCA** 2018.
- Towards Efficient Microarchitectural Design for Accelerating Unsupervised GAN-based Deep Learning, **HPCA** 2018.
- Towards Architectural Support for "Full Containerization" in Container Based Network Function Virtualization, **ASPLOS** 2017.
- Towards Pervasive and User Satisfactory CNN across GPU Microarchitectures, **HPCA** 2017 (**Best Paper Candidate**).
- Towards Efficient Server Architecture for Virtualized Network Function Deployment: Implications and Implementations, **MICRO** 2016.
- Bridging the I/O Performance Gap for Big Data Workloads: A New NVDIMM-based Approach, **MICRO** 2016.
- Towards Sustainable in-Situ Server Systems in the Big Data Era, **ISCA** 2015.
- HEB: Deploying and Managing Hybrid Energy Buffers for Improving Datacenter Efficiency and Economy, **ISCA** 2015.
- Understanding the Virtualization "Tax" of Scale-out Pass-Through GPUs in GaaS Clouds: An Empirical Study, **HPCA** 2015.
- Optimizing Virtual Machine Consolidation Performance on NUMA Server Architecture for Cloud Workloads, **ISCA** 2014.
- Enabling Datacenter Servers to Scale Out Economically and Sustainably, **MICRO** 2013.
- Power-performance Co-optimization of GPU Core Architecture using Resistive Memory, **HPCA** 2013.

- Enabling Distributed Generation Powered Sustainable High-Performance Data Center, **HPCA** 2013.
- Exploring High-Performance and Energy Proportional Interface for Phase Change Memory Systems, **HPCA** 2013.
- iSwitch: Coordinating and Optimizing Renewable Energy Powered Server Clusters, **ISCA** 2012.
- SolarCore: Solar Energy Driven Multi-core Architecture Power Management, **HPCA** 2011 (**Best Paper Award**).
- Mercury: A Fast and Energy-Efficient Multi-level Cell based Phase Change Memory System, **HPCA** 2011.
- Characterizing and Mitigating the Impact of Process Variations on Phase Change based Memory Systems, **MICRO** 2009.
- Soft Error Vulnerability Aware Process Variation Mitigation, **HPCA** 2009.
- Microarchitecture Soft Error Vulnerability Characterization and Mitigation under 3D Integration Technology, **MICRO** 2008 (**Best Paper Candidate**).
- NBTI Tolerant Microarchitecture Design in the Presence of Process Variation, **MICRO** 2008.
- Informed Microarchitecture Design Space Exploration using Workload Dynamics, **MICRO** 2007.
- Run-time Modeling and Estimation of Operating System Power Consumption, **SIGMETRICS** 2003.
- Understanding and Improving Operating System Effects in Control Flow Prediction, **ASPLOS** 2002.

Students

Current (I am lucky to work with the following excellent students)

- Meng Wang (Ph.D. Student)
- Huixiang Chen (Ph.D. Student)
- Xiangru Chen (Ph.D. Student)
- Jiaqi Zhang (Ph.D. Student)
- Jiechen Zhao (Ph.D. Student)

Graduated (Wish them all the best for their future endeavors)

Doctor

- **Dr. Chang Burm Cho** (Ph.D. Dec.'08, First Employment: Senior Design Engineer, Philips North America Corporation)
- **Dr. Xin Fu** (Ph.D. Dec.'09, Computing Innovation Fellow'09, First Employment: Tenure Track Assistant Professor, University of Kansas, NSF CAREER Award'14)

- **Dr. James Poe** (Ph.D. Dec.'09, NSF Graduate Research Fellow'06-'09, First Employment: Tenure Track Assistant Professor, Miami Dade College)
- **Dr. Wangyuan Zhang** (Ph.D. Aug.'10, UF Outstanding International Student'09, Computing Innovation Fellow'10 (declined by Wangyuan Zhang due to other job offers), First Employment: Technical Staff, NetApp)
- **Dr. Clay Hughes** (Ph.D. Dec.'10, First Employment: Assistant Professor, Florida State University at Panama City)
- **Dr. Zhongqi Li** (Ph.D. Dec.'12, UF Alumni Fellow, First Employment: Qualcomm)
- **Dr. Nilanjan Goswami** (Ph.D. Aug.'13, First Employment: Apple)
- **Dr. Amer Qouneh** (Ph.D. May'14, First Employment: Tenure Track Assistant Professor, Western New England University)
- **Dr. Chao Li** (Ph.D. Aug.'14, UF Alumni Fellow, Attributes of a Gator Engineer Recognition Award for Creativity'10, UF Outstanding International Student'10, Yahoo! Key Scientific Challenges Program Award'12, ACM SIGARCH Student Scholarship for Turing Centenary Celebration'12, Facebook Fellowship'13, Chinese Government Scholarship for Outstanding Self-financed Students Studying Abroad'14, First Employment: Tenure Track Assistant Professor, Shanghai Jiaotong University)
- **Dr. Ruijin Zhou** (Ph.D. May'15, First Employment: VMware)
- **Dr. Yang Hu** (Ph.D. Aug'17, UF Alumni Fellow, First Employment: Tenure Track Assistant Professor, University of Texas at Dallas)
- **Dr. Mingcong Song** (Ph.D. Aug'18)

Master (Thesis only)

- Madhura Joshi (MS. Dec'10, First Employment:Infinera)
- Ramkumar Shankar (MS. Dec'10, First Employment:AMD)
- Indrashish Basu (MS. Aug'14, First Employment: AMD)
- Juncheng Gu (MS. May'15, University of Michigan)
- Yilun Chen (MS. May'17, Purdue University)

Research

- Lab (IDEAL)
- Publications
- Prototyped Computer Systems
- Workshop on the Interaction between Operating Systems and Computer Architecture

Teaching

- EEL3701 Digital Logic and Computer Systems
- EEL4744 Microprocessor Applications
- EEL5764 Computer Architecture
- EEL6935 Billion Transistor Architecture

Information and Advice for Students

- Prospective Students
- How to Have a Bad Career as a Graduate Student?
- How to Have a Good Career in Computer Science?
- Advice Collection

Miscellaneous

- Dr. Tao Li's Homepage
- Computer Architecture Homepage