Tuan Ta

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Education

Cornell University 2017 – Present

Doctor of Philosophy in Computer & Electrical Engineering
Research Interests: Computer Architecture, Parallel Programming & Systems

University of Mississippi 2012 – 2016

Bachelor of Science in Computer Science | Summa Cum Laude
Minor in Mathematics for Engineering

Publications

Autonomous Data-Race-Free GPU Testing (Accepted) IISWC 2019

***Tuan Ta**, Xianwei Zhang, Anthony Gutierrez, and Bradford M. Beckmann*
To be presented in *IEEE International Symposium on Workload Characterization (IISWC)*

A Specialized Concurrent Queue for Scheduling Irregular Workloads on GPUs ICPP 2019

*David Troendle, **Tuan Ta**, and Byunghyun Jang*
In the 48th *International Conference on Parallel Processing (ICPP)*

A New Era of Silicon Prototyping in Computer Architecture Research RISC-V Day 2018

*Christopher Torng, Shunning Jiang, Khalid Al-Hawaj, Ivan Bukreyev, Berkin Ilbeyi, **Tuan Ta**, Lin Cheng, Julian Puscar, Ian Galton, and Christopher Batten*
In *RISC-V Day Workshop* at the 51st International Symposium on Microarchitecture

Simulating Multi-Core RISC-V Systems in gem5 CARRV 2018

***Tuan Ta**, Lin Cheng, and Christopher Batten*
In the 2nd *Workshop on Computer Architecture Research with RISC-V (CARRV)*

Implementation of a Scalable, Performance Portable Shallow Water Equation Solver Using Radial Basis Function-Generated Finite Difference Methods IJHPCA 2018

*Elliott Samuel, Raghu Raj Prasanna Kumar, Natasha Flyer, **Tuan Ta**, and Richard Loft*
In the *International Journal of High Performance Computing Applications (IJHPCA)*

Understanding the Impact of Fine-Grained Data Sharing and Thread Communication on Heterogeneous Workload Development ISPDC 2017

***Tuan Ta**, David Troendle, Xiaoqi Hu, Byunghyun Jang*
In the 16th *IEEE International Symposium on Parallel & Distributed Computing (ISPDC)*

Thread Communication and Synchronization on Massively Parallel GPUs (book chapter) 2017

***Tuan Ta**, David Troendle, and Byunghyun Jang*
In *Advances in GPU Research and Practice* book edited by Hamid Sarbazi-Azad

Accelerating DynEarthSol3D on Tightly Coupled CPU-GPU Heterogeneous Processors — Computers & Geosciences Journal 2015

***Tuan Ta**, Kyoshin Choo, Eh Tan, Byunghyun Jang, Eunseo Choi*
In *Computers & Geosciences Journal*

Academic Experience

Batten Research Group, Cornell University

Graduate Research Assistant — 2017 – Present

- Building an energy-efficient high-performance task-centric architecture composed of many tiny cores for task-parallel applications

HEROES Research Group, University of Mississippi

Undergraduate Research Assistant — 2013 – 2017

- Characterized multiple CPU-GPU cooperation paradigms in fine-grained data sharing CPU-GPU systems
- Designed concurrent data structures for CPU-GPU heterogeneous systems
- Accelerated an unstructured mesh-based simulator, DynEarthSol3D, used to study the long-term deformation of Earth's lithosphere on GPU using OpenCL

Industry Experience

AMD Research

Research Engineering Co-op — 2017

- Modeled and evaluated AMD's next-generation GPU's memory system in gem5 simulator
- Developed a random testing methodology for GPU's cache coherence protocols

National Center for Atmospheric Research

Undergraduate Research Intern — 2015

- Parallelized and accelerated Shallow Water Equations (SWE) using Radial Basis Function Finite Difference (RBF-FD) method on multi-core CPUs and GPUs using different programming models
- Analyzed a trade-off between portability and performance of OpenCL programming model in SWE using RBF-FD in comparison with OpenMP and CUDA on multi-core CPUs and GPUs

Honors & Awards

- Jacobs Scholar Fellowship — Cornell, 2017
- Summer Student of the Tour — AMD, 2017
- Taylor Medal — University of Mississippi, 2016
- Computer Science SAP Scholarship — University of Mississippi, 2015
- International Undergraduate Student Scholarship — University of Mississippi, 2014
- Outstanding Computer Science Student Awards — University of Mississippi, 2014, 2015 & 2016
- Academic Excellence Scholarship — University of Mississippi, 2012 – 2016
- John G. Adler Engineering Scholarship — University of Mississippi, 2012 – 2016