Yifan Sun

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Education

Northeastern University	*Boston, MA*
PH.D. IN COMPUTER ENGINEERING	*Sep. 2013 - Present*
University at Buffalo	*Buffalo, NY*
M.S. IN ELECTRICAL ENGINEERING	*Sep. 2011 - Jun. 2013*
Huazhong University of Science and Technology	*Wuhan, China*
B.S. IN ELECTRICAL ENGINEERING	*Sep. 2007 - Jun. 2011*

Working Experience

AMD	*Boxborough, MA*
SOFTWARE ENGINEER (CO-OP)	*Jul. 2018 - Dec.2018*
Dell EMC	*Hopkinton, MA*
SOFTWARE ENGINEER (CO-OP)	*Jul. 2016 - Dec.2016*

Award

- 2019 **NEU Outstanding Graduate Student in Experiential Learning**
- 2019 **NEU COE Teaching Award**

Teaching

Spring 2018	**EECE2560**: Fundamentals of Engineering Algorithms	*Northeastern University*
Fall 2017	**EECE2160**: Embedded Design Enabling Robotics	*Northeastern University*

Publications

- **Yifan Sun**, Trinayan Baruah, Saiful A. Mujumder, Shi Dong, Xiang Gong, Shane Treadway, Yuhui Bao, Spencer Hance, Carter McCardwell, Vincent Zhao, Harrison Barclay, Amir Kavyan Ziabari, Zhongliang Chen, Rafael Ubal, José L. Abellán, John Kim, Ajay Joshi, David Kaeli, "MGPUSim: Enabling Multi-GPU Performance Modeling and Optimization", The 46th International Symposium on Computer Architecture (ISCA)
- Mohammad Khavari Tavana, **Yifan Sun**, Nicolas Bohm Agostini, and David Kaeli, "Exploiting Adaptive Data Compression to Improve Performance and Energy-efficiency of Compute Workloads in Multi-GPU Systems", 33rd IEEE International Parallel & Distributed Processing Symposium (IPDPS)
- **Yifan Sun**, Trinayan Baruah, Saiful A Mojumder, Shi Dong, Rafael Ubal, Xiang Gong, Shane Treadway, Yuhui Bao, Vincent Zhao, José Luis Abellán, John Kim, Ajay Joshi, David Kaeli, "MGSim+ MGMark: A Framework for Multi-GPU System Research", arXiv preprint arXiv:1811.02884
- Saiful A. Mojumder, Marcia S Louis, **Yifan Sun**, Amir Kavyan Ziabari, Jose L. Abellan, John Kim, David Kaeli, Ajay Joshi, "Profiling DNN Workloads on a Volta-based DGX-1 System", 2018 IEEE International Symposium on Workload Characterization (IISWC)
- Rozhin Doroudi, Rana Azghandi, Zlatan Feric, Omic Mohaddesi, **Yifan Sun**, Jacqueline Griffin, Ozlem Ergun, David Kaeli, Pedro Sequeira, Stacy Marsella, Casper Harteveld, "An Integrated Simulation Framework for Examining Re-

siliency in Pharmaceutical Supply Chains Considering Human Behavior", 2018 Winter Simulation Conference (WinterSim)

- **Yifan Sun**, Saoni Mukherjee, Trinayan Baruah, Shi Dong, Julian Gutierrez, Prannoy Mohan, and David Kaeli. "Evaluating Performance Tradeoffs on the Radeon Open Compute Platform." In IEEE International Symposium on Performance Analysis of Systems and Software.
- **[Best Paper Award]** Shi Dong, Gong Xiang, **Yifan Sun**, Trinayan Baruah, David Kaeli. "Characterizing the Microarchitectural Implications of a Convolutional Neural Network (CNN) on GPUs", In ACM International Conference on Performance Engineering.
- Trinayan Baruah, **Yifan Sun**, Shi Dong, David Kaeli, and Norm Rubin. "Airavat : Improving Energy Efficiency of Heterogeneous Applications", In Design, Automation & Test in Europe Conference & Exhibition (DATE).
- Leiming Yu, Xun Gong, **Yifan Sun**, Qianqian Fang, Norm Rubin, and David Kaeli. "Moka: Model-based concurrent kernel analysis." In 2017 IEEE International Symposium on Workload Characterization (IISWC), pp. 197-206. IEEE, 2017.
- **[Best Paper Candidate] Yifan Sun**, Xiang Gong, Amir Kavyan Ziabari, Leiming Yu, Xiangyu Li, Saoni Mukherjee, Carter McCardwell, Alejandro Villegas, and David Kaeli. "Hetero-mark, a benchmark suite for CPU-GPU collaborative computing." In Workload Characterization (IISWC), 2016 IEEE International Symposium on, pp. 1-10. IEEE, 2016.
- **Yifan Sun**, Chisheng Liang, Steven Sutherland, Casper Harteveld, and David Kaeli. "Modeling player decisions in a supply chain game." In Computational Intelligence and Games (CIG), 2016 IEEE Conference on, pp. 1-8. IEEE, 2016.
- Amir Kavyan Ziabari, **Yifan Sun**, Yenai Ma, Dana Schaa, José L. Abellán, Rafael Ubal, John Kim, Ajay Joshi, and David Kaeli. "UMH: A hardware-based unified memory hierarchy for systems with multiple discrete gpus." ACM Transactions on Architecture and Code Optimization (TACO) 13, no. 4 (2016): 35.
- Saoni Mukherjee, **Yifan Sun**, Paul Blinzer, Amir Kavyan Ziabari, and David Kaeli. "A comprehensive performance analysis of HSA and OpenCL 2.0." In Performance Analysis of Systems and Software (ISPASS), 2016 IEEE International Symposium on, pp. 183-193. IEEE, 2016.
- Abdulla K. Al-Ali, **Yifan Sun**, Marco Di Felice, Jarkko Paavola, and Kaushik R. Chowdhury. "Accessing spectrum databases using interference alignment in vehicular cognitive radio networks." IEEE Transactions on Vehicular Technology 64, no. 1 (2015): 263-272.
- **Yifan Sun**, and Kaushik R. Chowdhury. "Enabling emergency communication through a cognitive radio vehicular network." IEEE Communications Magazine 52, no. 10 (2014): 68-75.
- Jithin Jagannath, Anu Saji, Hovannes Kulhandjian, **Yifan Sun**, Emrecan Demirors, and Tommaso Melodia. "A hybrid MAC protocol with channel-dependent optimized scheduling for clustered underwater acoustic sensor networks." In Proceedings of the Eighth ACM International Conference on Underwater Networks and Systems, p. 3. ACM, 2013.
- **[Best Student Paper Award] Yifan Sun**, and Tommaso Melodia. "The internet underwater: An IP-compatible protocol stack for commercial undersea modems." In Proceedings of the Eighth ACM International Conference on Underwater Networks and Systems, p. 37. ACM, 2013.

Patent

- **Yifan Sun**, Layne Peng, Robert A. Lincourt JR., John Cardente, John S Harwood. "Queue-based GPU Virtualization and Management System", US 10,109,030
- **Yifan Sun**, Layne Peng, Robert A. Lincourt JR., John Cardente, Junping Zhao. "Managing access to a resource pool of graphics processing units under fine grain control", US 10,262,390
- Junping Zhao, Layne Peng, Jie Bao, Kun Wang, **Yifan Sun**. "Checkpointing for GPU-as-a-Service in Cloud Computing Environment", US 10,275,851

Book Chapters

- "Simulating HSA," S. Hung, T.B. Jablin, Y. Sun, R. Ubal, and D. Kaeli, a book chapter in Heterogeneous System Architecture: Practical Applications for Industry, 1st edition, Elsevier Nov. 2015.

Talks

- "MGPUSim: a Flexible High-Performance Simulator for Multi-GPU Systems", 7th International Workshop on OpenCL (IWOCL), May 2019
- "Akita: A Go-Based Computer Architecture Simulator Framework ", Google, May 2019.
- "Enabling Multi-GPU High Performance Computing with Memory System Design", Lighting talk at Boston University Red Hat Collaboratory, Feb 2019.
- "Benchmarking the New Unified Memory of CUDA 8", with Frank Zhao. GTC 2017 San Jose.
- "Multi2Sim 5.0" Tutorial at IISWC, September 2016.

Selected Media Coverage

News@Northeastern	A Student Went off to Do a Co-op at a Major Tech Firm. He Came Back With a Patent.
WIRED	Finally, the Underwater We've All Been Waiting For
NBC News	Deep-sea Internet to Detect Tsunamis, Spy on Smugglers, and Discover Oil

Services

Web Chair	Annual Workshop on General Purpose Processing using Graphics Processing Unit (GPGPU)	*2016*

Skills

Programming	C/C++, Go, Python, Rust, Java, C#, PHP, Javascript, OpenCL, CUDA, SQL