Yizhou Shan

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RESEARCH INTERESTS

My research interests span Operating System, Distributed System, and Computer Architecture, with a focus on building fast and reliable systems for datacenters. I work at Wuklab, Purdue ECE, under the supervision of Prof. Yiying Zhang.

EDUCATION

Purdue University 2016-2021
Ph.D. in Computer Engineering (expected)

Institute of Computing Technology, Chinese Academy of Sciences 2014-2016
Research Assistant

Beijing University of Aeronautics and Astronautics 2010-2014
B.E. in Computer Engineering

INDUSTRY EXPERIENCE

Research Intern**, VMware Research** Palo Alto, CA, Summer 2018
Mentor: Dr. Stanko Novakovic

PUBLICATIONS

Stanko Novakovic, **Yizhou Shan**, Aasheesh Kolli, Michael Cui, Yiying Zhang, Haggai Eran, Liran Liss, Michael Wei, Dan Tsafrir, Marcos Aguilera, "Storm: a fast distributed storage system using remote memory primitives", 12th ACM International Systems and Storage Conference (***SYSTOR '19***)

Yizhou Shan, Yutong Huang, Yilun Chen, Yiying Zhang, "LegoOS: A Disseminated, Distributed OS for Hardware Resource Disaggregation", 13th USENIX Symposium on Operating Systems Design and Implementation (***OSDI '18***) (**Best Paper Award**)

Yizhou Shan, Shin-Yeh Tsai, Yiying Zhang, "Distributed Shared Persistent Memory", Proceedings of the ACM Symposium on Cloud Computing 2017 (***SoCC '17***)

WORKSHOPS AND POSTERS

Yizhou Shan, Yutong Huang, Yiying Zhang, "Challenges in Building and Deploying Disaggregated Persistent Memory", 10th Annual Non-Volatile Memories Workshop (***NVMW '19***)

Yizhou Shan, Shin-Yeh Tsai, Yiying Zhang, "Distributed Shared Persistent Memory", 9th Annual Non-Volatile Memories Workshop (***NVMW '18***)

Yizhou Shan, Yiying Zhang, "Disaggregating Memory with Software-Managed Virtual Cache", the 2018 Workshop on Warehouse-scale Memory Systems (***WAMS '18***) (co-located with ASPLOS '18)

Yiying Zhang, **Yizhou Shan**, Sumukh Hallymysore, "Disaggregated Operating System", 17th International Workshop on High Performance Transaction Systems (***HPTS '17***)

Yizhou Shan, Yilun Chen, Yutong Huang, Sumukh Hallymysore, Yiying Zhang, "Lego: A Distributed, Decomposed OS for Resource Disaggregation", Poster at the 26th ACM Symposium on Operating Systems Principles (***SOSP '17***)

Yizhou Shan, Sumukh Hallymysore, Yutong Huang, Yilun Chen, Yiying Zhang, "Disaggregated Operating System", Poster at the ACM Symposium on Cloud Computing 2017 (***SoCC '17***)

AWARDS

OSDI '18 Jay Lepreau Best Paper Award
OSDI '18 Student Travel Grant
SOSP '17 Student Travel Grant
SoCC '17 Student Travel Grant

RESEARCH EXPERIENCE

Disaggregated Operating System 2017-2018
Purdue University
We propose a new OS model called the splitkernel to manage disaggregated systems. Splitkernel disseminates traditional OS functionalities into loosely-coupled monitors, each of which runs on and manages a hardware component. Using the splitkernel model, we built LegoOS, a new OS designed for hardware resource disaggregation.

Distributed Shared Persistent Memory 2016-2017
Purdue University
We propose Distributed Shared Persistent Memory (DSPM), a new framework for using persistent memories in datacenter environments. We designed and implemented *Hotpot*, the first DSPM system in Linux kernel. Hotpot provides low-latency, transparent memory accesses, data persistence, data reliability and high availability.

Non-Volatile Memory (NVM) Emulator 2015-2016
Institute of Computing Technology, Chinese Academy of Sciences
We designed and implemented a NVM emulator in Linux kernel, which leverages Intel's Performance Monitoring Unit to emulate NVM's slower read/write latency and smaller bandwidth on physical DRAM. This emulator runs on bare-metal x86 machines.

ARMv8 CPU Project 2013
Institute of Computing Technology, Chinese Academy of Sciences
I participated in the Register-Transfer Level design and verification of some blocks within cache unit and load-store unit. It is commercial project collaborated with Huawei.