

***Farewell to Servers: Hardware, Software, and Network Approaches  
towards Datacenter Resource Disaggregation***

**Yiying Zhang**  
Purdue University

**Friday, October 5th, 2018**

10:00 am

EEB 248

Datacenters have been using a "monolithic" server model for decades, where each server has a motherboard that hosts a set of hardware devices such as processors and memory chips. This monolithic architecture is easy to deploy but cannot fully support the growing hardware heterogeneity in datacenters or provide hardware elasticity, failure isolation, and efficient resource utilization. Going forward, we have to rethink the decade-long server-centric model.

Our answer is to break the monolithic server model into distributed, network-attached hardware components that can each manage its own resources and can fail independently. For the past three years, my lab has been working on such datacenter "resource disaggregation" at system software, networking, and hardware levels. In this talk, I will discuss our various efforts in building a disaggregated datacenter (or "DC-3.0"). Specifically, I will focus on two systems: LegoOS, a new distributed, disseminated OS designed for datacenter resource disaggregation (OSDI'18), and LITE, a Local Indirection TiEr in kernel to virtualize native RDMA into a flexible, high-level, easy-to-use abstraction (SOSP'17).



Yiying Zhang is an assistant professor in the School of Electrical and Computer Engineering at Purdue University. Her research interests span operating systems, distributed systems, datacenter networking, and computer architecture, with a focus on building software, hardware, network systems for next-generation datacenters. Her lab is pioneering in the field of datacenter resource disaggregation and is among the few groups in the world that builds new OSes and full-stack, cross-layer systems. She has published at and served on the program committees of top systems conferences such as SOSP, OSDI, and ASPLOS, and her work has attracted various industry and academia attentions. Yiying received her Ph.D. from the Department of Computer Sciences at the University of Wisconsin-Madison and worked as a postdoctoral scholar at the University of California, San Diego before joining Purdue.