Towards A Competitive Phase Change Memory Design

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**DATE**  24 June 2016 (Friday)  
**TIME**  10:30 am - 11:30 am  
**VENUE**  YS-104, 5th Floor  
Yellow Zone, Academic 1  
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**ABSTRACT**

Conventional volatile memories such as SRAM and DRAM have been around for decades. However, their advancements have been hindered severely by difficulties in continuous technology scaling. The scaling challenges have encouraged vendors to look for alternatives in future memory generations. The emerging persistent memories have shown promising in scalability, low leakage and high reliability. These improvements are found attractive to computing platforms ranging from low-end embedded and mobile systems to high-end data centers and cloud computing. Nevertheless, there are intrinsic limitations to these memories that have slowed their adoption in real systems. In this talk, I will focus on one type of persistent memory, the Phase Change Memory (PCM), and discuss its major drawbacks in endurance, write latency, write power, and memory management from both a low-level device/architecture standpoint and a high-level system standpoint. All are limiting factors to the competitiveness of PCM in future memory technologies. I will present a collective of our recent findings through architecture approaches.

**BIOGRAPHY**

Jun Yang is an associate professor in the Electrical and Computer Engineering Department of University of Pittsburgh. She received her PhD in Computer Science from the University of Arizona, 2002. Jun’s research is in the broad area of computer architecture and her recent focuses include GPU designs, emerging memory technologies, interconnection networks, 3D integration, and power and thermal management techniques. Jun is an associate editor of IEEE Computer Architecture Letters. She is a recipient of NSF CAREER award in 2008, IEEE MICRO Top Picks award in 2010, and best paper awards of ISLPED 2013 and ICCD 2007.

All are welcome!