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EXPLORING PERFORMANCE, ENERGY, RELIABILITY AND ACCURACY OPTIMIZATIONS FOR FUTURE EXASCALE SYSTEMS

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Abstract:

Future large scale high performance supercomputer systems require high performance and energy efficiency to achieve exaflops computational power and beyond. Exascale initiative from Department of Energy (DOE) has been pushing various foundational research, ranging from efficient big data analysis to energy-efficient computing, in order to help such systems to operate efficiently and reliably before 2022. In this talk, I select three mini topics that I have been working on recently related to DOE ASCR program, including big graph analytics, energy-aware computing under reliability constraints, and approximate computing on heterogeneous architectures. I hope these topics will invoke interesting conversations that will eventually help us tackle various bottlenecks of the upcoming exascale computing.

ECE SPEAKER SERIES

Biography:

Shuaiwen Leon Song is currently a staff research scientist of High Performance Computing group at Pacific Northwest National Lab (PNNL). He graduated with a Ph.D. from Computer Science department at Virginia Tech in May 2013. In the past, he interned with several government and industrial labs including Center for Advanced Computing (CASC) at Lawrence Livermore National Lab (LLNL), Performance Analysis Lab (PAL) at Pacific Northwest National Lab (PNNL), and the Architecture Research Division at NEC Research American at Princeton. He was a 2011 Livermore ISCR scholar and recipient of 2011 Paul E. Torgersen Excellent research award. He has published in the major HPC conferences including IPDPS, ICS, PACT, SC, HiPEAC, etc, and his SC'15 paper is nominated for best student paper. He has served as PC member, session or publicity chair for several major HPC venues including SC, IPDPS, and HPDC. He is currently working on several projects from DOE ASCR, DoD, and DARPA. His research interests lie in broad areas of High Performance Computing . Visit his website for details:
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