中央研究院 資訊科學研究所
Institute of Information Science, Academia Sinica

Distinguished Lecture Series

Building Computing Machines That Sense, Adapt and Approximate

Tuesday, October 27th, 2015 10:00am
Auditorium 106 at New IIS Building

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Abstract

Uncertainty in computing has grown from a performance characterization challenge to a major reliability headache. Molecular assemblies in nanoscale devices do not behave like chiseled machines with tight tolerances. Computing machines today are largely ignorant of the variability in the behavior of underlying components from device to device, chip to chip, their wear over time save for thermal sensing in limited energy/power constrained applications. Designers sandbag designs with guardbands that threaten to flatten the very scaling curve that has driven growth of microelectronics over the past decade. This talk explores an alternate universe where sensing of the ongoing computation, its physical environment provides important data to adjust software/computation at different levels. The NSF Expeditions in Computing program on Variability has sought to characterize variability, program structuring and task scheduling that can make a software stack robust against variations in the computing environment. We discuss results and promising directions for continuing research in the emerging area of approximate computing.

For more information: http://www.iis.sinica.edu.tw/