NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S   S E M I N A R

Title: **Modeling and Design for Composable, Accelerator-Centric Architectures**

Speaker: Professor David Brooks
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                   School of Engineering and Applied Sciences
                   Harvard University

Date/Time: 16 January 2015, Friday, 02:00 PM to 03:00 PM

Venue: Executive Classroom, COM2-04-02

Chaired by: Dr Mitra, Tulika, Associate Professor, School of Computing
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Abstract:

Traditional performance and energy scaling benefits based on technology improvements have slowed greatly. To overcome these challenges, hardware acceleration in the form of datapath and control circuitry customized to particular algorithms or applications has surfaced as a promising approach, as it delivers orders of magnitude performance and energy benefits compared to general-purpose solutions. The importance of accelerators is most evident in domain-specific computing platforms currently embodied by today's energy-efficient mobile SoCs and network processors. To broaden the scope of accelerators into the domain of general-purpose computing it will be necessary to preserve flexibility and generality. Chip designers need to develop composable architectures consisting of ensembles of accelerators that can be pieced together to execute a large variety of workloads. These accelerator-centric architectures require quite different tools and design methodologies from general-purpose designs. This talk discusses recent efforts to develop new methodologies for workload characterization, rapid accelerator design, and pre-RTL simulation of accelerator-centric systems.

Biodata:

David Brooks is the Haley Family Professor of Computer Science in the School of Engineering and Applied Sciences at Harvard University. Prior to joining Harvard, he was a research staff member at IBM T.J. Watson Research Center. Prof. Brooks received his BS in Electrical Engineering at the University of Southern California and MA and PhD degrees in Electrical Engineering at Princeton University. His research interests include resilient and power-efficient computer hardware and software design for high-performance and embedded

systems. Prof. Brooks has received several honors and awards including the 2012 ACM Maurice Wilkes Award, NSF CAREER award, IBM Faculty Partnership Award, and DARPA Young Faculty Award.