

NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S S E M I N A R

Title: Energy Efficiency and Reliability in Many-Core Embedded Systems

Speaker: Dr. Amit Kumar Singh
University of Southampton, UK

Date/Time: 18 April 2017, Tuesday, 02:00 PM to 03:30 PM

Venue: Executive Classroom, COM2-04-02

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

Modern embedded systems, e.g., smart phones, PDAs and tablet PCs often need to support multiple embedded software applications and this number is increasing faster than ever. In order to satisfy the high performance requirement of various applications, the reliance on multi/many-core based systems is increasing. These systems require optimization for required performance metrics in order to fulfill the end-user demands. Energy consumption and reliability are two important metrics as their optimization leads to increased battery life and better user experience, respectively. To fulfill these requirements, efficient run-time mapping methodologies are required that should be able to map and execute applications efficiently on the many-core system resources.

This talk will provide an overview of run-time resource management activities that have been carried within PRiME project in order to optimize energy consumption and reliability. Additionally, more details about some recently proposed run-time management methodologies by highlighting the potential bottlenecks of existing ones. These methodologies exploit the application domain knowledge to perform compute intensive design space exploration at design-time such that only light-weight computations need to be performed at run-time. The results obtained by the proposed and relevant existing methodologies will be presented to show their advantages over existing approaches.

Biodata:

Dr. Amit Kumar Singh received the B. Tech degree in Electronics Engineering from Indian Institute of Technology (Indian School of Mines), Dhanbad, India, in 2006, and the Ph.D. degree from the School of Computer Engineering, Nanyang Technological University (NTU), Singapore, in 2013. He was with HCL Technologies, India for year and half before starting his PhD at NTU, Singapore, in 2008. He worked as a post-doctoral researcher at

National University of Singapore (NUS) from 2012 to 2014 and at University of York, UK from 2014 to 2016. Currently, he is working as senior research fellow at University of Southampton, UK. His current research interests include system level design-time and run-time optimizations of 2D and 3D multi-core systems with focus on performance, energy, temperature, and reliability. Dr. Singh was the receipt of ISORC 2016 Best Paper Award, PDP 2015 Best Paper Award, HiPEAC Paper Award, and GLSVLSI 2014 Best Paper Candidate. He has served on the TPC of IEEE/ACM conferences like ISED, MES, NoCArc and ESTIMedia.