

## Computer Science Seminar Series

### National Capital Region

## Power Debugging in Multicore Processors

**Speaker: Prof. Guru Venkataramani**  
**George Washington University**  
**Friday, November 1, 2013**  
**1:00PM- 2:00PM, NVC 325**

### Abstract

Multicore architectures present unique challenges for performance and power optimizations due to the multiplicity of cores and the complexity of interactions between the hardware resources. Understanding multicore power and its implications on application behavior is critical to the future of multicore software development.

In this talk, I will introduce one of our recently published works, Watts-inside, a hardware/software cooperative framework that relies on the efficiency of hardware support to accurately gather application power profiles, and utilizes software support and causation principles for a more comprehensive understanding of application power. I will discuss the design of our framework, along with certain optimizations that increase the ease of implementation. I will present a case study using two real applications, Ocean (Splash-2) and Streamcluster(Parsec-1.0) where, with the help of feedback from Watts-inside framework, we made simple code modifications and realized upto 5% power savings on chip power consumption.

### Biography



Dr. Guru Venkataramani is an Assistant Professor of Electrical and Computer Engineering at George Washington University since 2009. He received his PhD from Georgia Institute of Technology, Atlanta in 2009. His research area is computer architecture, and his current interests are hardware support for programmability, debugging, security and multicore computing. He is a recipient of NSF CAREER award in 2012, and ORAU Ralph E. Powe Junior Faculty Enhancement Award in 2010.