

# ECE Seminar Series

## Self-Adapting Optimization Techniques for Design-Constrained Embedded Systems

Dr. Ann Gordon-Ross, Assistant Professor  
Department of Electrical & Computer Engineering, University of Florida  
September 1, 2011  
12:50 pm - 1:40 pm  
Larsen 234

### Abstract

Due to rapidly increasing technology and the miniaturization of devices, embedded systems are becoming prevalent in a myriad of diverse domains such as aero-space, agriculture, home automation, health care, defense, logistics, automotive, consumer electronics (e.g., cellular phones, portable media players) to name a few. Despite these diverse application domains, embedded systems share commonalities with respect to design constraints such as stringent restrictions on the system's power, area, form factor, energy, lifetime, responsiveness, reliability, security, weight, etc. Rapidly changing and often hostile deployed environments for many embedded systems further influences/affects these design constraints, which exacerbates design challenges. Given the increasing design complexity of embedded systems and the decreasing time-to-market, embedded system designers are in need of self-adapting optimization techniques that enable embedded systems to autonomously and dynamically self-adapt to the system's environmental stimuli and application-specific design constraints. This presentation will highlight dynamic optimization techniques for several embedded system domains, including wireless sensor networks and aero-space, using reconfigurable architectural features such as self-adapting hardware and partially reconfigurable field-programmable gate arrays.

### Biography

A. Gordon-Ross received her B.S and Ph.D. degrees in Computer Science and Engineering from the University of California, Riverside in 2000 and 2007, respectively. She is currently an Assistant Professor of Electrical and Computer Engineering at the University of Florida and is a member of the NSF Center for High Performance Reconfigurable Computing (CHREC) at the University of Florida. She is also the faculty advisor for the Women in Electrical and Computer Engineering (WECE) and the Phi Sigma Rho National Society for Women in Engineering and Engineering Technology.

She received her CAREER award from the National Science Foundation in 2010 and Best Paper awards at the Great Lakes Symposium on VLSI (GLSVLSI) in 2010 and the IARIA International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM) in 2010. Her research interests include embedded systems, computer architecture, low-power design, reconfigurable computing, dynamic optimizations, hardware design, real-time systems, and multi-core platforms.