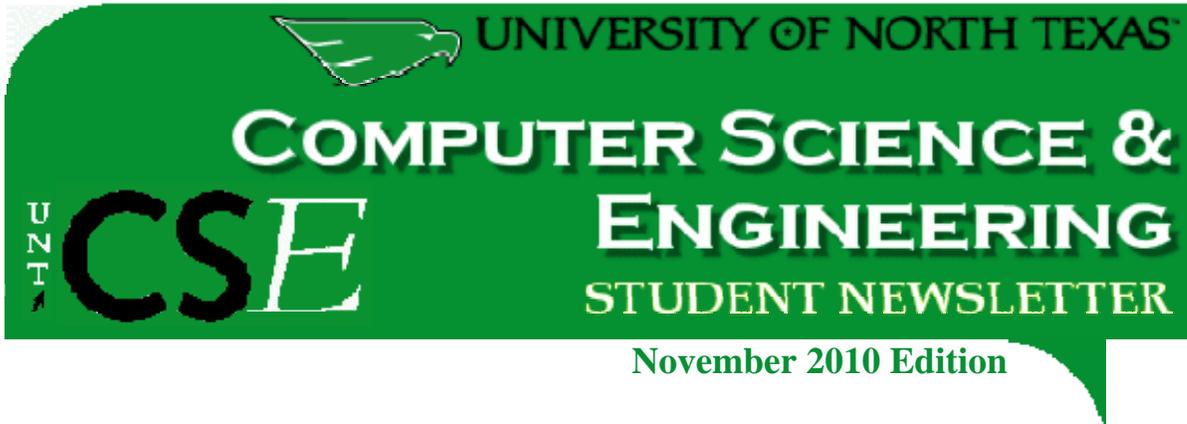


**Mohanty, Saraju**

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**From:** csnewsletter@unt.edu  
**Sent:** Wednesday, November 17, 2010 4:01 PM  
**To:** CSEInstructors  
**Subject:** November 2010 CSE Student Email Newsletter

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[http://www.cse.unt.edu/people/StudentNewsletters/2010\\_Nov\\_StudentEmailNewsletter.html](http://www.cse.unt.edu/people/StudentNewsletters/2010_Nov_StudentEmailNewsletter.html)



### **Department of Computer Science and Engineering News**

Dr. Parberry speaks at UNT's National Gaming Day  
CSE Department Seminar by Dr. Krishna Kavi on November 19  
CSE to host NACLO in February 2011  
Computer Systems Research Lab News  
Dr. Song Fu directs Dependable Computing Systems Lab  
NanoSystem Design Laboratory (NSDL) Produces UNT's First Woman Ph.D. in VLSI  
Net-Centric IUCRC holds Industrial Advisory Board Meeting  
Network Security Lab's Fall 2010 News  
Dr. Paul Tarau presents two papers  
CSE Programming Team News

### **Student News**

CSE Students invited to IEEE Meeting  
Two students defend Ph.D. Dissertations  
Taiwan Experience  
Research by UG Students recognized in UNT's Eagle Feather  
Exit Interview for Graduating Graduate Students on December 3  
Exit Surveys help improve UG courses

### **College of Engineering News**

College of Engineering to host robotics competition this weekend  
College of Engineering Advisory Board Meets  
Homecoming 2010  
New Advanced Materials Analysis Lab will benefit CENG faculty and students  
SHPE holds food drive

**Greetings from the CSE Interim Chair**

Description as follows:

The current wave of virtualization technology from VMware, Xen, Microsoft and IBM has revived interests in virtualization and virtual machine monitors. This course will cover the design and implementation of virtual machine monitors as well other recent trends in virtualization. Topics to be covered in the course include key techniques for CPU, memory, device, and network virtualization. New hardware features introduced by Intel and AMD to assist virtualization will be covered. The course will also survey the classic papers and recent developments in virtualization and research on exploiting virtualization technologies for resource provisioning, autonomic management, system security, and energy saving. Topics to be covered in the course include key virtualization techniques, OS-level and language-level virtual machines, virtual networking, virtual machine mobility, virtualization for network and distributed system security, virtualization for Grid and autonomic computing, and virtualization for service provisioning in Clouds and power management.

In addition to Dr. Fu, the director; the DCS includes Ph.D. students Ziming Zhang and Qiang Guan and undergraduate research students Oluwaseun Adeyemi and Chi-Chen Chiu. Any student with graduate standing with background or experience in networking or computer systems is welcome. For more information, please contact Dr. Song Fu at [Song\\_Fu@unt.edu](mailto:Song_Fu@unt.edu) or (940) 565-2341 ↑

### NanoSystem Design Laboratory (NSDL) Produces UNT's First Woman Ph.D. in VLSI

The NanoSystem Design Laboratory (NSDL) has produced UNT's first woman Ph.D. with VLSI specialization. **Garima Thakral**, with **Dr. Saraju Mohanty** as the Major Professor, defended her Ph.D. dissertation on September 17, 2010. Titled "Process-Voltage-Temperature Aware Nanoscale Circuit Optimization," her dissertation introduces several optimization algorithms for nanoscale circuit optimization. The research for her dissertation resulted in six journal or conference publications and grants from the National Science Foundation (NSF) and the Semiconductor Research Corporation (SRC). During her Ph.D., Garima delivered presentations in three international conferences demonstrating the quality of UNT research in selected avenues providing strong visibility for UNT.



Garima with her Major Professor Dr. Mohanty and other Committee Members



Karo with his Major Professor Dr. Mohanty and Interim Department Chair

Another student member of NSDL, **Karo Okobiah**, defended his Master's thesis on October 15, 2010. His thesis titled "Exploring Process-Variation Tolerant Design of Nanoscale Sense Amplifier Circuits" investigates ideas to build faster sense amplifiers. The sense amplifiers are the main components of DRAM which constitute the main

memory of a computer. Karo plans to continue at NSDL for a Ph.D.

In order to increase the visibility of UNT in the international arena and to provide UNT a continuous platform for quality student recruitment, Dr. Mohanty has established the International Symposium of Electronic system Design (ISED) which is supported by IEEE. ISED 2010 will take place December 20-22, 2010 in Bhubaneswar, the famed-temple city and emerging educational hub in India. ISED 2010 has received a grant of Indian Rs. 150,000 from the Dept. of Science and Technology, Government of India. NSF has already awarded a grant of \$10,000 to support ISED 2010. Thus, prestigious agencies from both the U.S. and India are funding ISED 2010. ↑

### Net-Centric IUCRC holds Industrial Advisory Board Meeting



NSF Net-Centric Industry/University Cooperative Research Center (Net-Centric IUCRC) Industrial Advisory Board Meeting was held October 21, 2010, at the Great Wolf Lodge in Grapevine. Faculty and students from UNT, UTD, SMU, ASU, as well as several scientists and engineers from industrial members of the Center attended the meeting. NSF program managers were also present. Faculty and students made presentations about their current research projects. Dr. Krishna Kavi of UNT is the director of the Center. The photo above shows some poster presentations made by students. ↑

### Network Security Lab's Fall 2010 News

## Two students defend Ph.D. Dissertations



**Garima Thakral** successfully defended her dissertation "Process-Voltage-Temperature Aware Nanoscale Circuit Optimization" in September 2010. In the picture above are (L-R) committee member Dr. Elias Kougianos, associate professor in the Department of Engineering Technology; Dr. Saraju P. Mohanty, major professor and associate professor in the Department of Computer Science and Engineering; Garima Thakral; Dr. Murali Varanasi, Chair of the Department of Electrical Engineering; and Dr. Armin Mikler, associate professor in the Department of Computer Science and Engineering.

Dissertation Abstract: Embedded systems are targeted towards portable applications and are desired to have low power consumption because such portable devices are typically powered by batteries. During memory accesses such systems such as laptops, cell phones media players, etc. consume a significant amount of power which affects the battery life. Therefore, efficient and leakage power saving cache designs are needed for longer operation of battery powered applications. Design engineers have limited control over certain parameters of the circuit and hence face numerous challenges that the process technology imposes on Static Random Access Memory (SRAM) circuit design.

As the process technology scales down deeper into the nanometer regime, the push for high performance and reliable systems becomes even more challenging. As a result, developing low-power designs, while maintaining better performance of the circuit, becomes a challenging task. Furthermore, a major need for accurate analysis and optimization of various forms of total power dissipation and performance in Nano-CMOS technologies, particularly in SRAMs, is another critical issue to be considered.

This dissertation proposes power-leakage and Static Noise Margin (SNM) analysis and methodologies to achieve optimized Static Random Access Memories (SRAMs). Alternate topologies of SRAMs, mainly 7-Transistor SRAM, are considered as a case study throughout this dissertation. The optimized cache designs are Process-Voltage-Temperature (PVT) tolerant and consider individual cells as well as memory arrays.