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From: csenewsletter@unt.edu
Sent: Thursday, November 18, 2010 11:19 PM
To: CSEInstructors
Subject: November 2010 CSE Alumni Email Newsletter

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UNIVERSITY OF NORTH TEXAS

COMPUTER SCIENCE & ENGINEERING

ALUMNI NEWSLETTER

Greetings from the CSE Interim Chairman

Dear CSE Alumni and Friends,

Before the end of the Fall 2010 semester, I wanted to share with you more news from our Department of Computer Science and Engineering. The Computer Systems Research Lab, the Dependable Computing Systems Lab, and the NanoSystem Design Lab have reported their latest news below. The Net-Centric IUCRC held their Industrial Advisory Board meeting in October. Dr. Ram Dantu's Network Security Lab reports on the research of each student.

We are glad to have Travis Coomer, B.S. 1983, as our Alumni Focus in this edition. You can stay in touch with us by joining our UNT Computer Science Alumni on Facebook. Congratulations to Garima Thakral and Tamara Schneider for successfully defending their Ph.D. dissertations this semester. CSE Ph.D. student Tommy Janjusic has written about his experience doing research and living in Taiwan.

As a graduate, you are invited to contact us and become involved with our CSE Department. I know our students would appreciate advice and experience from our alumni who are working in computer science and engineering positions. Your involvement is important for continued improvement in our program. We appreciate your support of CSE and UNT.

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 Deptartment 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

named the Director of Software Engineering for all Dallas based efforts.

In 2007 Travis was named the Director of Functional Engineering Management which expanded his responsibility to include oversight of all the engineering disciplines (systems, mechanical, electrical, software, test, and product support) for both the Dallas and Orlando, FL operations. Needless to say, the workload and travel expanded as well.

Although many years have passed and the memories of UNT have become somewhat faded, Travis would like to thank Denis Conrady, Tom Irby, Don Retzlaff, Jim Poirot, John Sharp, Susan Rulon, and Kathleen Swigger for their guidance through the CS curriculum.

We want to hear from you! What have you been doing since graduating from UNT? Please send a few paragraphs and a picture to **csealumni@unt.edu**.

Join UNT Computer Science alumni on Facebook

If you haven't checked us out yet on Facebook, please become an alumni member **HERE**. Don Retzlaff maintains this page and posts department news there. So far there are 95 members, but we hope you will become a member too!

Facebook has several other UNT Alumni pages, including the UNT Alumni Association. You can visit their page **HERE**. University of North Texas has its own Facebook page **HERE**.

Join the UNT Computer Science Alumni page on Facebook now!

Student 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.

Tamara Schneider defended her dissertation "A Framework for Analyzing and Optimizing Regional Bio-emergency Response Plans" in October 2010. Her committee members are (L-R): Robert Renka, professor in the CSE Department, Armin Mikler, major professor and associate professor in the CSE Department; Tamara Schneider; Chetan