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Huntsville Chapter of the IEEE Computer Society (<http://ewh.ieee.org/r3/huntsville/cs/>), Department of Electrical and Computer Engineering (<http://www.ece.uah.edu/>), LaCASA Laboratory (<http://www.ece.uah.edu/~lacasa/>), and UAH Chapter of Eta Kappa Nu invite you to a research seminar featuring an **IEEE Computer Society Distinguished Visitor, Prof. Dr. Krishna Kavi.**

**Guest Speaker: Dr. Krishna Kavi, Chairman of Computer Science and Engineering Dept., University of North Texas**

**Title: Billion Transistor Chips --  
How to garner the silicon real-estate for improved performance?**

**Time & Place: 04/03/2006, 12:00-13:00, Engineering Building 258, UAH**

#### **Abstract**

With the feasibility of integrating more than a billion transistors on a chip, we can consider building multiple CPUs on a chip, support multithreading, provide gigabyte cache memories, support reconfigurable logic so that application specific functions can be programmed into hardware. The key challenge is in deciding on how best to utilize the available transistors effectively for each application.

While performance has been the driving factor of research in Computer Architecture, embedded applications that are pervasive in devices such as HDTV's, cell phones, and other appliances are requiring a balance between performance and energy consumption. More specifically we need systems that can provide performance on demand, but become dormant when not needed to save energy.

These conflicting choices are presenting new challenges to researchers leading to very innovative ideas. In this talk I will present several inter-related research projects that are underway at the University of North Texas. They include an innovative, scalable multithreaded architecture, effective use of cache memories for scientific applications, use of reconfigurable logic for memory management functions and how to eliminate redundant function execution dynamically at run-time. I will give an overview of each of the research projects, results thus far and our current plans.

#### **Speaker Biography**

Krishna Kavi is currently a professor and the Chairman of Computer Science and Engineering department at the University of North Texas. Previously he held the Eminent Scholar Chair professorship at the University of Alabama in Huntsville, and a professorship at the University of Texas at Arlington. He was a Scientific Program Director at the US National Science Foundation between 1993-1995.

His research interests are primarily in the various aspects of Computer Architecture. He also conducted research on formal methods for the design and verification of software systems, agent-based formalisms, performance and reliability analyses of computer systems using Petri nets. He authored or co-authored more than 150 technical publications.