Discrete Mathematics Seminar

Time: Friday, 30 October 2009, 1:00-2:00 PM
Room: 238 Derrick Hall
Title: Automatic Tuning of Scientific Code for Multicore Architectures
Speaker: Dr. Apan Qasem, Computer Science Department

Abstract:

Over the last several decades we have witnessed tremendous change in the landscape of computer architecture. New architectures have emerged at a rapid pace with greater computing capabilities, that have often exceeded our expectations. However, the rapid rate of architectural innovations has also been a source of major concern for the high-performance community. Each new architecture or even a new model of a given architecture has brought with it new features that have added to the complexity of the target platform. As a result, it has become increasingly difficult to exploit the full potential of modern architectures for complex scientific applications. The gap between the theoretical peak and the actual achievable performance has increased with every step of architectural innovation. As Moore's Law heads towards the power wall and multi-core platforms become more pervasive, this performance gap is likely to increase. The current practice in dealing with the changing nature of computer architecture and its ever increasing complexity is the laborious process of manual retargeting of code which often costs many person-months for just a single application. My talk will describe an automatic tuning strategy that aims to eliminate the need for manual retargeting and retuning of scientific applications. I will give a brief overview of our tuning framework and explain the core ideas behind our strategy of pruning the large and complex search space of optimization parameters.

Bio:

Apan Qasem is an Assistant Professor in the Computer Science Department. He joined Texas State in 2007 after receiving his PhD from Rice University where he was a member of Dr. Ken Kennedy's Highpersoft research group. Before going to Rice he earned a BA in Computer Science and Economics from Ohio Wesleyan University. His native country is Bangladesh.
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