Electrical & Computer Engineering

S E M I N A R

Louisiana State University

Improving Microprocessor Performance and Energy Efficiency by Exploiting OS-Aware Architecture Design

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Abstract—The Operating System (OS), which manages both hardware and software resources, constitutes a major component of today's complex systems. Many modern and emerging workloads (e.g., database, web servers and file/e-mail applications) exercise the OS significantly. However, microprocessor designs and (performance/power) optimizations have largely been driven by user-level applications. In this talk, I will present the advantages and benefits of integrating the OS component in processor architecture design.

In the first part of my talk, I will show how control flow prediction hardware, which is critical to deliver instruction level parallel and pipelining performance on today's highly speculative and deeply pipelined machines, can be cost-effectively adapted to significantly improve its speculation accuracy on the exception-driven, intermittent OS execution. In the second part of my talk, I will address the adaptations of processor resources to reduce OS power on today's high-complexity processors, which exploit aggressive hardware design to maximize the performance across a wide range of targeted applications.

When: **Tuesday, 20 April 2004, 10:30 - 11:30**
Where: **Room 117 EE Building**
Info: `http://www.ece.lsu.edu/seminar`