COMP615

COMP 615: Advanced Topics in Compilers for Parallel Processors (Fall 2012)

Cancellation notice: This course has been cancelled for Fall 2012. Please contact the instructor if you are interested in instead doing an independent study project related to this course.

Instructor:	Prof. Vivek Sarkar, DH 3131	**Office hours:**	By appointment
Assistant:	Amanda Nokleby, akn3@rice.edu, DH 3137, 713-348-2031		
Meeting time:	Mondays 3pm - 5pm	**Location:**	TBD

Summary

In this course, we will focus on new challenges facing compilers for parallel processors, in light of future hardware trends related to manycore parallelism, memory hierarchies, heterogeneity, energy efficiency, and resilience. We will study the formalization of compiler optimization problems that can assist programmers in dealing with these hardware trends, and discuss related research challenges involved in implementing scalable and portable programming model for future generations of parallel processors.

The course will have self-study and participatory components in the first and second halves of the semester. We will assign papers to enrolled students on the first day of class (August 20, 2012). In the first half of the semester, each student will be expected to read their assigned paper, and develop algorithms to extend the results in the paper. In the second half of the semester (starting October 29, 2012), each student will be expected to give a 1-hour presentation summarizing the paper that they read and their ideas on extending the results in the paper. At the end of the semester, each student will be expected to submit a report describing these concepts in more detail. An actual implementation of the new ideas is not required for the report, but hand-coded performance studies are encouraged to justify the proposed approach. Successful projects will result in reports that can be extended into research publications.

Recommended Prerequisite: COMP 515 or equivalent