Panel: Parallel Computing in the Undergraduate Computer Science Curriculum

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Abstract

Universities are beginning to respond to the need, identified by conferences such as Supercomputing, for students to be educated in parallel computing. The intent of this panel is to discuss the issues involved in incorporating parallel computing into the undergraduate curriculum in computer science.

Some of the issues to be discussed are:

- Should parallel computing be taught at the undergraduate level?
- Should parallel computing be taught as a topic in its own right, included as a subtopic in other courses, or both?
- Should a parallel computing course be offered as a computer science course or as an interdisciplinary course?
- What topics should be central to a parallel computing course?
- Should such a course emphasize theory, practical application, or a mix?
- How should the myriad of parallel architectures be handled? Should they be offered in a survey format? Should a course focus on a particular hardware, or should it focus on a generalized hardware model? What should the role of software simulators for hardware be?
- What parallel hardware options are available for use in the teaching of parallel computing? What should the role of the national supercomputing centers be?
- What kind of work/exercises should be expected of the student? Should students be given programming assignments involving a wide range of different environments or be required to develop advanced concepts utilizing a particular environment?
- What kind of textbook would be best for a parallel computing course? Are there appropriate ones available?

It is the panel's hope that the ensuing discussion will provide insight and guidance for those who have been struggling with these issues on their own. Our goal is to encourage others to begin thinking creatively about this topic.

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