Broadening the Audience for Computational Thinking: Graduate Student Consortium

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Abstract

The fifth annual graduate consortium at VL/HCC addresses the question: How can researchers and designers of end-user development environments better address the needs of an increasingly diverse population?

1. Introduction
For the fifth year, the U.S. National Science Foundation continues its sponsorship of a graduate student consortium at the VL/HCC Symposia (NSF grant # IIS-0735160). These workshops, on themes related to diversity and universal access of software development technologies, have brought together graduate students, faculty mentors, and conference attendees to discuss the innovative work of graduate students and provide feedback and suggestions on their research. The events have produced considerable excitement and community building around approaches for reaching broad populations.

2. Research theme
Over the past decade, the diversity and ubiquity of people’s goals, interactions, and concerns with information systems have increased dramatically. Interactive computer software permeates many individuals’ working lives, and people are increasingly relying on computing and information systems for leisure and home activities. For many people it is no longer sufficient to consume the packaged software and scripted tasks developed by the professional software industry — many professionals now must produce their own computational solutions to a wide variety of problems, including spreadsheet models, web sites, educational media and simulations, automated business procedures, and scientific visualizations.

Current advances toward computational thinking by end users are not evenly distributed across all segments of the population. In fact, our society is rapidly evolving into two distinct classes: the “computation haves” and the “computation have-nots”. This class distinction becomes an obvious barrier to the opportunities for the “have-nots” to advance in terms of career and influence, both individually and in groups. Enhancing access to a wide range of information technology will be a key to helping the “have-nots”: this is the theme for the proposed event.

In this event, we aim to look beyond surface-level interactions with computers to consider an area of fundamental information power: computational problem solving. Ensuring that designers of computational languages and tools consider the needs of populations historically overlooked in information technology will increase the chance that these individuals and groups are able to learn and use the more powerful tools that are fast becoming part of everyday information literacy. At the same time, such efforts may lead researchers to identify software construction metaphors and techniques that increase the usability of their languages and environments more generally.

3. This year’s program
The graduate consortium attracts numerous high-quality submissions from a diverse set of students and institutions. Those selected for this year’s event appear in the pages that follow. The research applies a variety of technical and social approaches to understanding and addressing the needs of children, teens and adults, students and teachers, males and females, and people with disabilities, in home, school, and professional settings. Bringing together this group of students to discuss their research will undoubtedly result in an interesting and provocative program.

4. Program committee
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