Democratizing Access to Computational Tools:
The 7th Annual VL/HCC Graduate Student Consortium

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Abstract

The seventh annual graduate consortium at VL/HCC addresses the question: How can researchers and designers of computational tools support problem-solving and information manipulation by diverse user populations?

1. Introduction

For the seventh year, the U.S. National Science Foundation continues its sponsorship of a graduate student consortium at the VL/HCC Symposia (NSF grant # IIS-0929989). 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 the 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

People increasingly rely on computing for activities at home and work, but for many, it is no longer sufficient to use the scripted tasks supported by packaged software. Instead, many people now produce their own computational solutions, such as spreadsheets, web sites, educational media and simulations, automated business procedures, and scientific visualizations.

Unfortunately, the tools for creating these solutions often neglect the needs of disadvantaged users or smaller user groups. Supporting these groups effectively requires research not only from computer science, but also sociology, education, design, psychology, business, and other disciplines.

In the VL/HCC’09 Doctoral Consortium, 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.

Ultimately, the work presented in the doctoral consortium is expected to improve to aspects of this universal access problem:

- Increasing access to computational tools by these disadvantaged populations;
- Increasing access to the information services that the use of these tools enables.

3. This year’s program

This year’s graduate consortium attracted 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 approaches to understanding and addressing the needs of disadvantaged users in a wide variety of educational 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

Andrew Ko (chair), University of Washington
Judith Good, University of Sussex
Mary Beth Rosson, Pennsylvania State University
Andrew Begel, Microsoft Research, Redmond