Facilitating Visualization Capacity Building

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ABSTRACT

Visualization plays an important role in discovery and insight. As a tool, visualization is often times utilized as a light in a sea of data providing insight to large, complex datasets. The scientific community and society at large are the beneficiaries of the utility visualization brings. As more and more data is created and consumed persons with knowledge of the visualization process, applications, methods and techniques will continue to be in demand in all fields with data visualization needs. The purposes of this panel are: (1) to discuss the need for facilitating visualization capacity building: incorporating visualization early and often into computing and other educational programs to equip students with transferrable skillsets that are in demand in the global workforce and (2) to facilitate a discussion on what knowledge base is needed to build and strengthen visualization capacity of users in visualization application domains.

1. Introduction

As a tool, visualization is often times utilized as a light in a sea of data providing insight to large, complex datasets. The scientific community and society at large are the beneficiaries of the utility visualization brings. As more and more data is created and consumed persons with knowledge of the visualization process, applications, methods and techniques will continue to be in demand in all fields with data visualization needs. This panel will discuss the need for facilitating visualization capacity building: incorporating visualization early and often into computing and other educational programs to equip students with transferrable skillsets that are in demand in the global workforce. Panel organizers will present assessment and outcomes from initiatives that focus on broadening participation in visualization, their experiences in recruitment of underrepresented groups and incorporating visualization in educational curriculums.

2. Motivation

The seven stages of visualizing data described by Ben Fry reconciles insight from diverse fields into the data visualization process [1]. Introducing the visualization process to students who are in the formative stages of their careers is a first step towards contributing to the knowledge base of future professionals and researchers for whom visualization tools and techniques will be instrumental in advancing science and discovery.

3. Visualization Capacity Building

There is an increasing demand for knowledgeable persons who understand the visualization process and it's applicability to large, complex data. How do we prepare students to fill this demand? What skill and academic preparation are needed by persons with interest in visualization to have the capacity to contribute the visualization knowledgebase and address data visualization challenges in research, industry and academia? How do we build visualization competencies (concrete skills) that foster a capacity to think critically and creatively about data visualization challenges while utilizing concrete data visualization skills to address data visualization problems? What does one need to have the capacity to do this?

Panel organizers would like to facilitate a discussion about skills and knowledge needed to prepare students for discipline specific visualization challenges. Data visualization needs are ubiquitous. What does the visualization community feel should be taught or introduced to equip students at all levels with knowledge and skills necessary to have the confidence and visualization capacity needed to contribute to scientific discovery; to visually represent large amounts of data in a non-overwhelming way? What knowledge base is needed that would lead to visualization capacity in visualization application domains for persons with an interest in scientific, geographical, information visualization and/or visual analytics for persons with interest in visualization, but lacking the visualization training. Solutions to visualization problems are often created by teams of people with diverse backgrounds that vary in education and experience. What are the steps to be taken know, to ensure the continued diversity of solutions in data visualization?

This panel will discuss the need for visualization capacity building from several perspectives: at the undergraduate level (Byrd), K-12 (Cottam), within interdisciplinary research (Georges Grinstein), Deep Personalization for learning topical interests within STEM (Paul Fishwick) as well as visualization capacity for using graphical visualization to teach coding to high school and college students (Jey Veerasamy).

We invite participants to engage in the discussion and share their thoughts on visualization capacity building to prepare the next generation of researchers and scientists to be competitive in the data driven world we live in.

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