Data analysis and decision-making processes often involve multiple stakeholders, each with his or her own perspective and specialties. Nevertheless, most visualization tools are designed for single users.

Collaborative visualization supports multiple users, collective sensemaking, and artifact sharing in the design of visual information systems. Although early research in this relatively new area focused mainly on single-session screen-sharing approaches, multiple analysts often need to collaborate over a series of distributed, asynchronous sessions. Such collaboration requires information systems to explicitly support features such as retrievable-history mechanisms, state recovery, and novel interaction methods.

This special issue highlights ongoing research in this area, covering topics ranging from prototype systems to the fundamental technical challenges of creating successful collaborative systems.

In This Issue

In “Social Mirrors as Social Signals: Transforming Audio into Graphics,” Karrie Karahalios and Tony Bergstrom examine how visual feedback of verbal conversation influences group behavior. By evaluating different prototypes in practical settings, they show how visualizations can serve as compact archives of the meeting process. Their final prototype is a good example of an interactive visualization that helps a group of people obtain consensus on discussion topics during and after a meeting.

“Supporting Exploration Awareness in Information Visualization,” by Yedendra Shrinivasan and Jarke van Wijk, discusses structured techniques for revisiting previous data explorations. They propose improvements to an existing visual-analysis system that help users better track and revisit previous states in their exploration. This allows multiple analysts to more easily examine each other’s analysis paths and hand off work when necessary.

In “CoCoNutTrix: Collaborative Retrofitting for Information Visualization,” Petra Isenberg and her colleagues investigate simple techniques for converting single-user visualization applications to multiuser collaborative applications. Using a single-user social-network-analysis tool as an example, they extract general guidelines for evaluating other visualization tools’ adaptability.

The next two articles describe case studies involving scientific collaboration. In “Designing a Collaborative Visual Analytics Tool for Social and Technological Change Prediction,” Pak Chung Wong and his colleagues present a prototype system that helps scientists from multiple backgrounds collaborate on modeling how the changing environment affects public infrastructure. One interesting finding is that in this setting, scientists don’t care much for state-of-the-art visualization techniques. Instead, they use commonly accepted techniques such as line charts to share findings with scientists from different disciplines.

Finally, in “AstroSim: Collaborative Visualization of an Astrophysics Simulation in Second Life,” Arturo Nakasone and his colleagues relate their experiences using the popular virtual-world platform Second Life for remote collaboration in astrophysics. Despite some of Second Life’s technical limitations, they found potentially useful applications for remote expert analysis and collective layperson introductions to the world of astrophysics.

We believe the articles in this issue represent a good cross section of current collaborative visualization research. We thank the authors for their submissions and are excited to see how this field will evolve.
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