Information Visualization

Introduction to the Vast 2010 Special Issue–Special Issue of best papers of Visual Aanlytics Science and Technology (VAST) 2010

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>> Version of Record - Jun 27, 2012

What is This?

Introduction to the VAST 2010 Special Issue–Special Issue of best papers of Visual Aanlytics Science and Technology (VAST) 2010

Silvia Miksch[1] and Brian D. Fisher[2]

The term "visual analytics" was coined in *Illuminating the Path, an R&D Agenda in Visual Analytics*.[1] Defined then as "the science of analytical reasoning facilitated by highly interactive visual interfaces," visual analytics has grown into a rich multidisciplinary field that focuses on the design, implementation, and use of interactive visualization and analysis environments in complex cognitive tasks.

The evolution of this new field is documented in a more recent book, *Solving Problems with Visual Analytics*.[2] Based on the work of the European Union Coordination Action "Vismaster: Mastering the Visualization Age,"[3] these researchers propose that visualization has become "the medium of a semi-automated analytical process, where humans and machines cooperate using their respective, distinct capabilities for the most effective results."

Together, these books document the synergy of visualization and computational and mathematical models in achieving the goals of visual analytics: to "synthesize data into information and knowledge; derive insight from massive, dynamic, and often conflicting data; detect the expected and discover the unexpected; provide timely, defensible, and understandable assessments; and communicate assessments effectively for action."[1]

The IEEE Conference on Visual Analytics Science and Technology (VAST) builds upon this vision. VAST began in 2006 as the IEEE International Symposium on Visual Analytics Science and Technology, and became a full conference for the first time in 2010. VAST papers examine the use of interactive visualization in real-world applications as well as in the laboratory, build new interactive data science and visualization technologies that better facilitate analysis, and evaluate those technologies with respect to their success in augmenting reasoning and coordination of action in a broad range of cognitive tasks. Of particular interest are papers that bridge two or more of these areas for an integrated translational research approach.

This issue includes four papers from VAST 2010 that were judged by reviewers and the papers' editors as exemplary. Two of these papers focus on the human side of the equation: "A Closer Look at Note Taking in the Co-located Collaborative Visual Analytics Process" examines the ways in which analysts document their collaboration on analytic task performance using interactive visualization. The second, "Towards the Personal Equation of Interaction: The Impact of Personality Factors on Visual Analytics Interface Interaction" explores methods for assessing individual differences between analysts in order to customize visualization systems for optimal performance of an individual analyst.

A different perspective is taken by "Comparing Different Levels of Interaction Constraints for Deriving Visual Problem Isomorphs". Here the authors establish the ability of changes in problem representation to influence the choice of task strategies by analysts, and hence affecting the outcome of the analysis. The final paper in our issue, "Visual Exploration of Classification Results for Risk Assessment" is perhaps the most integrative of the group. The authors propose a visual analytics framework that bridges machine learning and

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interactive visualization for analysis of real-world data, in this case from forensic psychology.

Many people have contributed to visual analytics; however, the creative spark that initiated this vital and important field was that of Jim Thomas of the US Pacific Northwest National Laboratory. Jim passed away in 2010, and the VAST community will miss his warmth, vision, and leadership. The creativity, innovation, and utility of the work described in the papers in this special issue are convincing evidence for the success of the field and a tribute to the dedication and vision of Jim Thomas. The editors wish to dedicate this special issue to his memory.

We would like to thank the authors for the effort that went into their submissions, the program committee and reviewers for their work in selecting and ordering contributions for the final program as well as for this special issue, and, of course, the conference participants who made VAST 2010 such a great success.

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