Test of Time Awards

To improve the future, we must reflect on our past. The IEEE VIS Test of Time Award is an accolade given to recognize articles published at previous conferences whose contents are still vibrant and useful today and have had a major impact and influence within and beyond the visualization community.

By making the awards at the conference opening we hope to encourage researchers to aim to produce work that is forward looking and has transformational potential. We're trying to build on our heritage to establish an ambitious future by making it clear at the conference opening that we want participants to aspire to be writing the papers that will be relevant in 10 and 20 years.

Papers are selected for each of the three conferences (VAST, InfoVis and SciVis) by Test of Time Awards committees, appointed by the VIS Steering Committee.

The decisions are based on objective measures such as the numbers of citations, and more subjective ones such as the quality and longevity and influence of ideas, outreach, uptake and effect not only in the research community, but also within application domains and visualization practice.

This year VAST gave out a 10 year test of time award, InfoVis a 10 and 20 year award, and SciVis a 14, 15 and 25 year award.

VAST

2012:

Enterprise Data Analysis and Visualization: An Interview Study

Sean Kandel, Andreas Paepcke, Joseph M. Hellerstein, Jeffrey Heer

findings helping other organizations to evaluate the costs/benefits of visual analytics more effectively. These studies take a lot of work, recruiting people, coding the results, they make it look easy! Before this work we struggled to find the vocabulary to use, now we have framings that are easy to remember and conceptualise the space nicely. The paper provided the vocabulary for authors to use. The paper has received an impressive quantity of citations and patent citations, is still relevant today, and continues to be cited frequently.

Committee: Jonathan C. Roberts (Chair), Claudio Silva, Jo Wood, Torsten Möller

InfoVis

2002:
SpaceTree: supporting exploration in large node link tree, design evolution and empirical evaluation.
Catherine Plaisant, Jesse Grosjean, Benjamin B Bederson.
DOI: 10.1109/INFVIS.2002.1173148

This paper introduced an interactive tree exploration technique that has been highly influential on later techniques and widely applied in different application areas, from biology to document visualization. Implementations of techniques inspired by SpaceTree are found in popular visualization toolkits, such as D3. The semantic zoom design is an interesting precursor to “scented widgets” which are found in many modern user interfaces. Arguably this highly cited paper was more rigorous and innovative in its approach compared to its contemporaries and was likely a trailblazer for a more “modern” style of VIS paper. In particular, it included a rigorous empirical study which was relatively rare for InfoVis papers at the time. Furthermore, it included greater discussion and reflection on the design process compared to contemporary and earlier papers that tended to focus on just the final result.

Committee: Tim Dwyer (chair), Lyn Bartram, Steven Franconeri

2012
Design Study Methodology: Reflections from the Trenches and the Stacks
Michael Sedlmair, Miriah Meyer, Tamara Munzner
DOI: 10.1109/TVCG.2012.213

This paper was the first to bring the methodology of design studies to the visualization community of researchers and practitioners, setting a comprehensive framework for developing and deploying visualization solutions to real-world problems. The authors

itself), this paper provided a principled foundation for how to think about the entire design process from problem analysis through the choice of visualization solutions to validation and reflection on both outcomes and method, setting the stage for further practice and research. The impact of this paper has been extensive both within and beyond the Vis community, in research, education and practice. Evidence of impact beyond our own field is that over half the citations of this paper come from outside Visualization-focused forums, including HCI, UX, bioinformatics, engineering, climate science, health and numerous domains, and it continues to be cited. This paper continues to be standard reading in many visualization and visual analytics courses around the world. Design study methods are now the “gold standard” in approaching visualization solutions to real-world problems.

Committee: Tim Dwyer (chair), Lyn Bartram, Steven Franconeri

SciVis

1997:
ROAMing terrain: Real-time Optimally Adapting Meshes
Mark Duchaineau, Murray Wolinsky, David E. Sigeti, Mark C. Miller, Charles Aldrich, Mark B. Mineev-Weinstein
DOI: 10.1109/VISUAL.1997.663860

In the 1990s, the flood of available satellite and other remote-sensing data drove the need for effective tools to render terrains efficiently. Cited over 1400 times, this paper solved many of the outstanding issues by introducing split-merge operations for triangle bintrees, guaranteeing mesh consistency in a simple and elegant fashion. The work introduced in this paper profoundly influenced the state of the art for terrain rendering in films, games, flight simulation and remote sensing and continues to influence research efforts today.

Committee: Hamish Carr, Kelly Gaither, Gerik Scheuermann, Kristi Potter

2007:
Efficient Computation and Visualization of Coherent Structures in Fluid Flow Applications.
Christoph Garth, Florian Gerhardt, Xavier Tricoche, Hans Hagen
DOI: 10.1109/TVCG.2007.70551

This paper introduced foundational work analyzing fluid flows. One of the long-standing problems in visualizing fluids is vector visualization, namely the detection and display of significant boundaries such as separatrices in fluid flow simulations. In 2007, two papers

for much of the subsequent work and is consistently cited every year as fundamental work that continues to be built upon today.

Committee: Hamish Carr (chair), Kelly Gaither (chair), Gerik Scheuermann, Kristi Potter

2008

A practical approach to Morse-Smale complex computation: Scalability and generality

Attila Gyulassy, Peer-Timo Bremer, Bernd Hamann, and Valerio Pascucci

DOI: 10.1109/TVCG.2008.110

This paper introduced the use of Digital Morse Theory in the visualization domain as part of the now decades-long application of computational topology to data analysis and visualisation at scale. This topic has seen consistent support from the Department of Energy as one of the approaches needed for exascale analysis, and has driven deep algorithmic improvements. In this paper, the authors resolved massive complexity in the existing techniques by applying a simple discrete model of gradient analysis that could readily be computed at scale. Cited 231 times, this paper made multiple further developments feasible and established Morse-Smale Complexes as a first-class tool in the kit of techniques we apply to data, and continues to be relevant to anyone working with topological visualization.

Committee: Hamish Carr (chair), Kelly Gaither (chair), Gerik Scheuermann, Kristi Potter

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