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.

VAST currently considers conferences 10 years prior to the current conference, InfoVis 10 and 20 years prior, and SciVis 15 and 25 years prior.

VAST

2011:
SensePlace2: GeoTwitter analytics support for situational awareness.
Alan M. MacEachren, Anuj Jaiswal, Anthony C. Robinson, Scott Pezanowski, Alexander

The paper has over 400 citations, and is still regularly cited today as an early example of visual analytics for aggregated social media data. Published when Twitter was still ramping up, the paper described using tweets and their location data for situation awareness during emergencies. It includes a survey of emergency practitioners and a useful discussion of situation awareness. This work led to important discussions of the ethics of location-based data in crisis situations.

Committee: Brian Fisher, Shixia Liu, Catherine Plaisant (chair), Jonathan Roberts

InfoVis

2001:
Ordered Treemap Layouts.
Ben Shneiderman & Martin Wattenberg.
DOI: 10.1109/INFVIS.2001.963283

followup journal paper
Ordered and Quantum Treemaps: Making effective use of 2D space to display hierarchies.
Benjamin B. Bederson, Ben Shneiderman, Martin Wattenberg. ACM TOG 21(4):833–854 2002
DOI: 10.1145/571647.571649

This paper represents foundational work that underlies modern treemap algorithms. The 2001 InfoVis paper introduced a method to retain the order of items while also producing rectangles with low aspect ratios, similar to squarified tree maps. The approach addressed a critical problem of layout stability, where changes in the data set could result in dramatic discontinuous changes in the treemap layout. With trends towards interaction as a critical component of InfoVis system design, and the need to handle updating data, mechanisms to ensure layout stability were an important and long lasting contribution to InfoVis. Also notable are the introduction of meaningful metrics for assessing layout quality and a systematic and rigorous evaluation of several different treemap algorithms against those metrics; as such, the paper can also be commended as an early exemplar of algorithm quality benchmarking. The followup journal version paper also introduced the quantum treemap approach suitable for laying out images within the generated rectangles, and included a user study to assess human performance benefits of the new algorithms. These two papers in combination have been cited over 1000 times (June 2021, Google Scholar), and were an important step towards the current widespread adoption of the treemap family of techniques.

The sheer number of citations for this paper – over 3300 according to Google Scholar in June 2021, the most for any InfoVis paper so far by a significant margin – make it an easy recommendation for the 2011 Test of Time award. This system paper proposed a new framework, called "D3", with unprecedented flexibility for creating web-based visualizations using a novel mechanism for binding data to HTML elements. D3's novel approach to dynamic data updates and support for interactivity was featured through many compelling examples. Viewed with the benefit of ten-year hindsight, the phenomenal influence of D3, not only to the field of data visualization research, but also to the practical uptake of interactive visualization on the web, is a larger story of the remarkable efforts of the authors. The open-source D3 system benefited greatly from the previous experiences of the authors in developing visualization frameworks such as Protovis (2009) and Prefuse (2005). D3 was supported by an amazing ecosystem of champions and developers, led tirelessly by the authors. Bostock later worked closely with the New York Times, using D3 to create visualizations that allowed journalists to immerse readers in data-rich stories as never before. By creating a framework that was compelling and easy for web developers to use to author interactive visualizations, the authors have undeniably helped to bring data visualization to the mainstream. This paper is a cornerstone contribution to this conference specifically and more generally to the success of our field as a whole.

Committee: Tamara Munzner (chair), Tim Dwyer, Melanie Tory

SciVis

1996:
The Design and Implementation of an Object-Oriented Toolkit for 3D Graphics and Visualization.
William J. Schroeder, Kenneth M. Martin, William E. Lorensen.

followup book
The Visualization Toolkit: an Object-Oriented Approach to 3D Graphics.
Will Schroeder, Ken Martin, Bill Lorensen.

This work describes the design and inspiration for a system that has become an open source

much so that the toolkit may be underrepresented in an analysis of citations alone. Among systems papers, this paper stands out as an example of work that shifted our field and anchored the open and transparent nature of our science.

Committee: Hamish Carr, Issei Fujishiro, Penny Rheingans, Terry Yoo (chair)

2006:
Ambient Occlusion and Edge Cueing for Enhancing Real Time Molecular Visualization.
Marco Tarini, Paolo Cignoni, Claudio Montani.
DOI: 10.1109/TVCG.2006.115

This paper has received over 450 citations and is prominent both within the scientific visualization community as well as outside our direct community with 200 citations across the IEEE publications. The paper represents work that is not tied to a level of technology or research domain. It considers the problems of illustrating three dimensional structure in real time and considers the problem at differing levels of complexity, scale, and detail. It is an elegant treatment of a difficult problem and a model of effective presentation of lasting results in visualization research.

Committee: Issei Fujishiro, Penny Rheingans, Terry Yoo (chair)

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