2021 VGTC Visualization Lifetime Achievement Award

Jarke van Wijk, Eindhoven University of Technology (TU/e)

The 2021 VGTC Visualization Lifetime Achievement Award goes to Jarke van Wijk for his groundbreaking work in the field of data visualization, including fundamentally new approaches for trees, graphs, time series, and flows, for his extensive service to our community, and for his inspiring thoughts on the value of visualization.

Jarke van Wijk is full professor in visualization at the Department of Mathematics and Computer Science of Eindhoven University of Technology (TU/e). He studied Industrial Design Engineering at Delft University of Technology, and got his MSc degree in 1982, with honors. He pursued a PhD at Delft University of Technology on ray tracing and geometric modeling, which he finished in 1986, again with honors. After a year working in software industry, he has worked for ten years at the Netherlands Energy Research Foundation ECN. One focus was on flow visualization using texture, which led to the Spot Noise technique (1991) and later to Image Based Flow Visualization (2002). Collaboration with Robert van Liere at CWI led to the HyperSlice method, for the visual inspection of multi-dimensional functions, and new methods for computational steering. His last project at ECN concerned the visualization of large time-series, for which he developed his Cluster-and-Calendar method, using a combination of statistics and simple visualizations.

In 1998 he joined Eindhoven University of Technology, first as associate professor, since 2001 as full professor. He expanded his focus to information visualization and visual analytics. His first project addressed a practical question: “Why is my disk full?”. This led to SequoiaView, a highly popular tool, which leaned on his Cushion Treemap method. Furthermore, work on tree visualization with MSc students, co-supervised by Huub van de Wetering and Kees Huizing, led to Squarified Treemaps, the use of botanic trees to visualize abstract hierarchies, and new methods to visualize business data. The latter led to MagnaView, a successful start-up by Erik-Jan van der Linden and Roel Vliegen.

Besides trees, he has worked intensively on the visualization of graphs and networks, together with his PhD students Frank van Ham, Danny Holten, Hannes Pretorius, and Stef van den Elzen. Danny Holten developed Hierarchical Edge Bundling, which led to multiple awards and to SynerScope, another successful start-up by Jan-Kees Buenen and Danny. Stef’s PhD project, funded by SynerScope, led to multiple award-winning new methods for the interactive visualization of dynamic and multivariate graphs.

With other PhD students and colleagues, he has addressed a variety of other topics in visualization. Challenging real world problems led to new methods for the visualization of moving objects (with Niels Willems and Roeland Scheepens, co-supervised by Huub van de Wetering), image collections (Paul van der Corput, co-supervised by Marcel Worring), and computer network data (Bram Cappers). Furthermore, he studied perception of glyphs with Jing Li, co-supervised by Jean-Bernard Martens, and developed new methods for capturing insights from visualization with Yedendra Shrinivasan.

Reflection on visualization in general led to his paper “The Value of Visualization”, which centered around a simple idea: the value is a balance between the value of knowledge gained and efforts needed. Furthermore, he has worked on mathematical visualization. He developed methods to visualize Seifert surfaces (knot theory), regular maps (symmetric tessellations of closed surfaces), and used hyperbolic geometry for smooth zooming and panning. His Myriahedral Projections show how a wild variety of world maps can be generated, almost without distortion, if one does not care about cuts.

He has (co-)authored more than 170 papers in visualization and computer graphics. Results from his group have found wide dissemination, via education, inclusion in tools and libraries, and start-ups. He was nine times paper cochair, for all major visualization conferences. He received the IEEE Visualization Technical Achievement Award in 2007; the Eurographics 2013 Outstanding Technical Contributions Award; and received six best paper awards and two test of time awards.