EuroVA 2020

EuroVis Workshop on Visual Analytics

Norrköping, Sweden
May 25, 2020

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Sponsored by EUROGRAPHICS Association

DOI: 10.2312/eurova.20202006

Published by the Eurographics Association
–Postfach 2926, 38629 Goslar, Germany–
in cooperation with
Institute of Computer Graphics & Knowledge Visualization at Graz University of Technology
and
Fraunhofer IGD (Fraunhofer Institute for Computer Graphics Research), Darmstadt

ISBN 978-3-03868-116-8
ISSN 2664-4487

The electronic version of the proceedings is available from the Eurographics Digital Library at `https://diglib.eg.org`

Table of Contents

Table of Contents

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Author Index

Keynote

Visual Analytics – Empowering the Human in the Loop

Christian Tominski

Abstract

Visual analytics combines computation, visualization, and interaction to facilitate the generation of insight into large data and complex phenomena. While much work in visual analytics focuses on treating the data by computational means, the human is indispensable for combining the right analysis tools and interpreting their results. Therefore, it is important to strengthen the human in the loop. Ideally, humans have direct control of the analysis loop. However, directness is threatened by (i) spatial separation, (ii) temporal separation, and (iii) conceptual separation. Addressing these threats, three fundamental ideas for empowering the human will be discussed: in-situ interaction, progressive computation, and guidance. In-situ interaction reduces spatial separation by offering a lightweight and efficient way to facilitate flexible information access. Progressive computations reduce temporal separation and contribute to a better understanding and control of involved processes. Guidance operates at the interface between human and machine to reduce conceptual separation and keep the analysis loop going. Examples and live demos will illustrate the discussed concepts and techniques.

Short Biography

Christian Tominski is a researcher and lecturer at the Institute for Visual & Analytic Computing at the University of Rostock, Germany. He received doctoral (Dr.-Ing.) and post-doctoral (Dr.-Ing. habil.) degrees in 2006 and 2015, respectively. His main research interests are in visualization of and interaction with data. He is particularly interested in effective and efficient techniques for interactively exploring and editing complex data. Christian has published numerous papers on new visualization and interaction techniques for multivariate data, temporal data, geo-spatial data, and graphs. He co-authored three books on the visualization of time-oriented data in 2011, on interaction for visualization in 2015, and on interactive visual data analysis in 2020. Christian has developed several visualization systems and tools, including the LandVis system for spatio-temporal health data, the VisAxes tool for time-oriented data, and the CGV system for coordinated graph visualization.