2022 IEEE Visualization and Visual Analytics (VIS 2022)

Oklahoma City, Oklahoma, USA
16 – 21 October 2022

IEEE Catalog Number: CFP22081-POD
ISBN: 978-1-6654-8813-6

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22081-POD
ISBN (Print-On-Demand):	978-1-6654-8813-6
ISBN (Online):	978-1-6654-8812-9
ISSN:	2771-9537

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

2022 IEEE Visualization and Visual Analytics (VIS)

VIS 2022

Table of Contents

Message from the VIS 2022 General Chairs ..... **x**
VIS 2022 Conference Committee ..... **xi**
VIS 2022 Program Committee ..... **xiv**
VIS 2022 Reviewers ..... **xviii**

Best Paper

Exploring D3 Implementation Challenges on Stack Overflow 1
Leilani Battle (University of Washington), Danni Feng (University of Maryland), and Kelli Webber (University of Maryland)

Visualization Systems and Graph Visualization

Facilitating Conversational Interaction in Natural Language Interfaces for Visualization 6
Rishab Mitra (Georgia Institute of Technology), Arpit Narechania (Georgia Institute of Technology), Alex Endert (Georgia Institute of Technology), and John Stasko (Georgia Institute of Technology)

VegaFusion: Automatic Server-Side Scaling for Interactive Vega Visualizations 11
Nicolas Kruchten (École de technologie supérieure), Jon Mease (VegaFusion Technologies LLC), and Dominik Moritz (Carnegie Mellon University)

Streamlining Visualization Authoring in D3 Through User-Driven Templates 16
Hannah Bako (University of Maryland), Alisha Varma (University of Maryland), Anuoluwapo Faboro (University of Maryland), Mahreen Haider (University of Maryland), Favour Nerrise (University of Maryland), Bissaka Kenah (University of Maryland), and Leilani Battle (University of Washington)

Plotly-Resampler: Effective Visual Analytics for Large Time Series 21
Jonas Van Der Donckt (Ghent University - imec, Belgium), Jeroen Van Der Donckt (Ghent University - imec, Belgium), Emiel Deprost (Ghent University - imec, Belgium), and Sofie Van Hoecke (Ghent University - imec, Belgium)

Explaining Website Reliability by Visualizing Hyperlink Connectivity 26
Seongmin Lee (Georgia Tech), Sadia Afroz (AVAST Software), Haekyu Park (Georgia Tech), Zijie J. Wang (Georgia Tech), Omar Shaikh (Georgia Tech), Vibhor Sehgal (AVAST Software), Ankit Peshin (AVAST Software), and Duen Horng (Polo) Chau (Georgia Tech)

Paths Through Spatial Networks 31
Alex Godwin (American University)

LineCap: Line Charts for Data Visualization Captioning Models 35
Anita Mahinpei (Harvard University), Zona Kostic (Harvard University), and Chris Tanner (Harvard University)

Intentable: A Mixed-Initiative System for Intent-Based Chart Captioning 40
Jiwon Choi (Sungkyunkwan University) and Jaemin Jo (Sungkyunkwan University)

Visual Analytics, Decision Support, and Machine Learning

VISUAL AUDITOR: Interactive Visualization for Detection and Summarization of Model Biases 45
David Munechika (Georgia Tech.), Zijie J. Wang (Georgia Tech.), Jack Reidy (Fiddler AI.), Josh Rubin (Fiddler AI.), Krishna Gade (Fiddler AI.), Krishnaram Kenthapadi (Fiddler AI.), and Duen Horng Chau (Georgia Tech.)

RMExplorer: A Visual Analytics Approach to Explore the Performance and the Fairness of Disease Risk Models on Population Subgroups 50
Bum Chul Kwon (IBM Research), Uri Kartoun (IBM Research), Shaan Khurshid (Broad Institute), Mikhail Yurochkin (IBM Research), Subha Maity (University of Michigan), Deanna G Brockman (Broad Institute), Amit V Khera (Broad Institute), Patrick T Ellinor (Broad Institute), Steven A Lubitz (Broad Institute), and Kenney Ng (IBM Research)

Visualizing Rule-based Classifiers for Clinical Risk Prognosis 55
Dario Antweiler (Fraunhofer IAIS, Fraunhofer Center for Machine Learning) and Georg Fuchs (Fraunhofer IAIS)

TIMBERTREK: Exploring and Curating Sparse Decision Trees with Interactive Visualization 60
Zijie J. Wang (Georgia Institute of Technology), Chudi Zhong (Duke University), Rui Xin (Duke University), Takuya Takagi (Fujitsu Laboratories), Zhi Chen (Duke University), Duen Horng Chau (Georgia Institute of Technology), Cynthia Rudin (Duke University), and Margo Seltzer (University of British Columbia)

FairFuse: Interactive Visual Support for Fair Consensus Ranking 65
Hilson Shrestha (Worcester Polytechnic Institute), Kathleen Cachel (Worcester Polytechnic Institute), Mallak Alkhathlan (Worcester Polytechnic Institute), Elke Rundensteiner (Worcester Polytechnic Institute), and Lane Harrison (Worcester Polytechnic Institute)

Guided Data Discovery in Interactive Visualizations via Active Search 70
Shayan Monadjemi (Washington University in St. Louis), Sunwoo Ha (Washington University in St. Louis), Quan Nguyen (Washington University in St. Louis), Henry Chai (Carnegie Mellon University), Roman Garnett (Washington University in St. Louis), and Alvitta Ottley (Washington University in St. Louis)

Parametric Dimension Reduction by Preserving Local Structure 75
Chien-Hsun Lai (National Yang Ming Chiao Tung University, Taiwan), Ming-Feng Kuo (National Yang Ming Chiao Tung University, Taiwan), Yun-Hsuan Lien (National Yang Ming Chiao Tung University, Taiwan), Kuan-An Su (National Yang Ming Chiao Tung University, Taiwan), and Yu-Shuen Wang (National Yang Ming Chiao Tung University, Taiwan)

Uniform Manifold Approximation with Two-Phase Optimization 80
Hyeon Jeon (Seoul National University), Hyung-Kwon Ko (NAVER Webtoon Corp.), Soohyun Lee (Seoul National University), Jaemin Jo (Sungkyunkwan University), and Jinwook Seo (Seoul National University)

Personal Visualization, Theory, Evaluation, and eXtended Reality

Let's Get Personal: Exploring the Design of Personalized Visualizations 85
Beleicia Bullock (Stanford University), Shunan Guo (Adobe Research), Eunyee Koh (Adobe Research), Ryan Rossi (Adobe Research), Fan Du (Adobe Research), and Jane Hoffswell (Adobe Research)

Who Benefits from Visualization Adaptations? Towards a Better Understanding of the Influence of Visualization Literacy 90
Marc Satkowski (Technische Universität Dresden), Franziska Kessler (Technische Universität Dresden), Susanne Narciss (Technische Universität Dresden), and Raimund Dachselt (Technische Universität Dresden)

VisQuiz: Exploring Feedback Mechanisms to Improve Graphical Perception 95
Ryan Birchfeld (Worcester Polytechnic Institute), Maddison Caten (Worcester Polytechnic Institute), Errica Cheng (Worcester Polytechnic Institute), Madyson Kelly (Worcester Polytechnic Institute), Truman Larson (Worcester Polytechnic Institute), Hoan Phan Pham (Worcester Polytechnic Institute), Yiren Ding (Worcester Polytechnic Institute), Noëlle Rakotondravony (Worcester Polytechnic Institute), and Lane Harrison (Worcester Polytechnic Institute)

OSCAR: A Semantic-based Data Binning Approach 100
Vidya Setlur (Tableau Research), Michael Correll (Tableau Research), and Sarah Battersby (Tableau Research)

Toward Systematic Design Considerations of Organizing Multiple Views 105
Abdul Rahman Shaikh (Northern Illinois University), David Koop (Northern Illinois University), Hamed Alhoori (Northern Illinois University), and Maoyuan Sun (Northern Illinois University)

Toward Systematic Considerations of Missingness in Visual Analytics 110
Maoyuan Sun (Northern Illinois University), Yue Ma (Northern Illinois University), Yuanxin Wang (University of Waterloo), Tianyi Li (Purdue University), Jian Zhao (University of Waterloo), Yujun Liu (Northern Illinois University), and Ping-Shou Zhong (University of Illinois Chicago)

The Role of Extended Reality for Planning Coronary Artery Bypass Graft Surgery 115
Madhurima Vardhan (Duke University), Harvey Shi (Duke University), David Urick (Duke University), Manesh Patel (Duke University), Jane A. Leopold (Brigham and Women's Hospital), and Amanda Randles (Duke University)

ARShopping: In-Store Shopping Decision Support Through Augmented Reality and Immersive Visualization 120
Bingjie (Jenny) Xu (Northwestern University), Shunan Guo (Adobe Research), Eunyee Koh (Adobe Research), Jane Hoffswell (Adobe Research), Ryan Rossi (Adobe Research), and Fan Du (Adobe Research)

Scientific Visualization, Ensembles, and Accessibility

Color Coding of Large Value Ranges Applied to Meteorological Data 125
Daniel Braun (University of Cologne), Kerstin Ebell (University of Cologne), Vera Schemann (University of Cologne), Laura Pelchmann (University of Cologne), Susanne Crewell (University of Cologne), Rita Borgo (King's College London, UK), and Tatiana von Landesberger (University of Cologne)

Volume Puzzle: Visual Analysis of Segmented Volume Data with Multivariate Attributes 130
M. Agus (Hamad Bin Khalifa University, Qatar), A. Aboulhassan (Hamad Bin Khalifa University, Qatar), K. Al Thelaya (Hamad Bin Khalifa University, Qatar), G. Pintore (CRS4, Italy), E. Gobbetti (CRS4, Italy), C. Calì (University of Turin, Italy), and J. Schneider (Hamad Bin Khalifa University, Qatar)

Droplet-Local Line Integration for Multiphase Flow 135
Alexander Straub (University of Stuttgart), Sebastian Boblest (University of Stuttgart), Grzegorz K. Karch (University of Stuttgart), Filip Sadlo (Heidelberg University), and Thomas Ertl (University of Stuttgart)

Efficient Interpolation-based Pathline Tracing with B-Spline Curves in Particle Dataset 140
Haoyu Li (The Ohio State University), Tianyu Xiong (The Ohio State University), and Han-Wei Shen (The Ohio State University)

Visualizing Confidence Intervals for Critical Point Probabilities in 2D Scalar Field Ensembles 145
Dominik Vietinghoff (Leipzig University), Michael Böttinger (Deutsches Klimarechenzentrum), Gerik Scheuermann (Leipzig University), and Christian Heine (Leipzig University)

ASEVis: Visual Exploration of Active System Ensembles to Define Characteristic Measures 150
Marina Evers (University of Müster, Germany), Raphael Wittkowski (University of Münster, Germany), and Lars Linsen (University of Münster, Germany)

Accelerated Probabilistic Marching Cubes by Deep Learning for Time-Varying Scalar Ensembles 155
Mengjiao Han (Scientific Computing and Imaging Institute), Tushar M. Athawale (Oak Ridge National Laboratory), David Pugmire (Oak Ridge National Laboratory), and Chris R. Johnson (Scientific Computing and Imaging Institute)

Beyond Visuals: Examining the Experiences of Geoscience Professionals With Vision Disabilities in Accessing Data Visualizations 160
Nihanth W. Cherukuru (University Corporation for Atmospheric Research (UCAR)), David A. Bailey (University Corporation for Atmospheric Research (UCAR)), Tiffany Fourment (University Corporation for Atmospheric Research (UCAR)), Becca Hatheway (University Corporation for Atmospheric Research (UCAR)), Marika M. Holland (University Corporation for Atmospheric Research (UCAR)), and Matt Rehme (University Corporation for Atmospheric Research (UCAR))

Author Index **165**