IEEE Visual Analytics Science and Technology Conference

Session: Traffic and Urban Planning

SmartAdP: Visual Analytics of Large-scale Taxi Trajectories for Selecting Billboard Locations
Dongyu Liu, Di Weng, Yuhong Li, Jie Bao, Yu Zheng, Huamin Qu, and Yingcai Wu

SemanticTraj: A New Approach to Interacting with Massive Taxi Trajectories
Shamal AL-Dohuki, Farah Kamw, Ye Zhao, Chao Ma, Yingyu Wu, Jing Yang, Xinyue Ye, Fei Wang, Xin Li, and Wei Chen

Session: Exploratory Analysis

Visualizing Dimension Coverage to Support Exploratory Analysis
Ali Sarvghad, Melanie Tory, and Narges Mahyar

Magnostics: Image-based Search of Interesting Matrix Views for Guided Network Exploration
Michael Behrisch, Benjamin Bach, Michael Hund, Michael Delz, Laura von Rüden, Jean-Daniel Fekete, and Tobias Schreck

A Grammar-based Approach for Modeling User Interactions and Generating Suggestions During the Data Exploration Process
Filip Dabek and Jesus J Caban

A Visual Analytics Approach for Categorical Joint Distribution Reconstruction from Marginal Projections
Cong Xie, Wen Zhong, and Klaus Mueller

Session: Machine Learning

Squares: Supporting Interactive Performance Analysis for Multiclass Classifiers
Donghao Ren, Saleema Amershi, Bongshin Lee, Jina Suh, and Jason D. Williams

An Analysis of Machine- and Human-Analytics in Classification
Gary K. L. Tam, Vivek Kothari, and Min Chen

Multi-Resolution Climate Ensemble Parameter Analysis with Nested Parallel Coordinates Plots
Junpeng Wang, Xiaotong Liu, Han-Wei Shen, and Guang Lin

Towards Better Analysis of Deep Convolutional Neural Networks
Mengchen Liu, Jiaxin Shi, Zhen Li, Chongxuan Li, Jun Zhu, and Shixia Liu

Visualizing the Hidden Activity of Artificial Neural Networks
Paulo E. Rauber, Samuel G. Fadel, Alexandre X. Falcão, and Alexandru C. Telea
Session: Managing Visual Analytics Process

Characterizing Guidance in Visual Analytics ......................................................... 111
Davide Ceneda, Theresia Gschwandtner, Thorsten May, Silvia Miksch, Hans-Jörg Schulz, Marc Streit, and Christian Tominski

Toward Theoretical Techniques for Measuring the Use of Human Effort in Visual Analytic Systems .......... 121
R. Jordan Crouser, Lyndsey Franklin, Alex Endert, and Kris Cook

Designing Progressive and Interactive Analytics Processes for High-Dimensional Data Analysis .......... 131
Cagatay Turkay, Erdem Kaya, Selim Balcisoy, and Helwig Hauser

Session: Textual Data

NameClarifier: A Visual Analytics System for Author Name Disambiguation .. 141
Qiaomu Shen, Tongshuang Wu, Haiyan Yang, Yanhong Wu, Huamin Qu, and Weiwei Cui

TopicLens: Efficient Multi-Level Visual Topic Exploration of Large-Scale Document Collections .......... 151
Minjeong Kim, Kyongpil Kang, Deokgun Park, Jaegul Choo, and Niklas Elmqvist

TextTile: An Interactive Visualization Tool for Seamless Exploratory Analysis of Structured Data and Unstructured Text .......................................................... 161
Cristian Felix, Anshul Vikram Pandey, and Enrico Bertini

Session: Biomedical Visualization

AnaFe: Visual Analytics of Image-derived Temporal Features – Focusing on the Spleen .................. 171
Ievgeniia Gutenko, Konstantin Dmitriev, Arie E. Kaufman, and Matthew A. Barish

Blockwise Human Brain Network Visual Comparison Using NodeTrix Representation .......... 181
Xinsong Yang, Lei Shi, Madelaine Daianu, Hanghang Tong, Qingsong Liu, and Paul Thompson

PhenoStacks: Cross-Sectional Cohort Phenotype Comparison Visualizations .......................... 191
Michael Glueck, Alina Gvozdik, Fanny Chevalier, Azam Khan, Michael Brudno, and Daniel Wigdor

Session: Education and Games

Visual Analysis of MOOC Forums with iForum ............................................ 201
Siwei Fu, Jian Zhao, Weiwei Cui, and Huamin Qu

A Visual Analytics Approach for Understanding Reasons behind Snowballing and Comeback in MOBA Games .... 211
Quan Li, Peng Xu, Yeuk Yin Chan, Yun Wang, Zhipeng Wang, Huamin Qu, and Xiaojuan Ma

Session: Complementing Visual and Algorithmic Analysis

AxiSketcher: Interactive Nonlinear Axis Mapping of Visualizations through User Drawings .......... 221
Bum Chul Kwon, Hannah Kim, Emily Wall, Jaegul Choo, Haesun Park, and Alex Endert

VisMatchmaker: Cooperation of the User and the Computer in Centralized Matching Adjustment .......... 231
Po-Ming Law, Wenchao Wu, Yixian Zheng, and Huamin Qu

Visual Interaction with Dimensionality Reduction: A Structured Literature Analysis ............ 241
Dominik Sacha, Leishi Zhang, Michael Sedlmair, John A. Lee, Jaakko Peltonen, Daniel Weiskopf, Stephen C. North, and Daniel A. Keim

VisFlow - Web-based Visualization Framework for Tabular Data with a Subset Flow Model .......... 251
Bowen Yu and Cláudio T. Silva

Session: Visual Knowledge Discovery and Sensemaking

Annotation Graphs: A Graph-Based Visualization for Meta-Analysis of Data based on User-Authored Annotations .. 261
Jian Zhao, Michael Glueck, Simon Breslav, Fanny Chevalier, and Azam Khan
IEEE Information Visualization Conference

Session: Interaction

Visualization by Demonstration: An Interaction Paradigm for Visual Data Exploration .................................................. 331
Bahador Saket, Hannah Kim, Eli T. Brown, and Alex Endert

Vega-Lite: A Grammar of Interactive Graphics ................................................................. 341
Arvind Satyanarayan, Dominik Moritz, Kanit Wongsuphasawat, and Jeffrey Heer

HindSight: Encouraging Exploration through Direct Encoding of Personal Interaction History ........................................ 351
Mi Feng, Cheng Deng, Evan M. Peck, and Lane Harrison

PowerSet: A Comprehensive Visualization of Set Intersections .................................................................................. 361
Bilal Alsallakh and Liu Ren

Session: Geovisualization

Quantifying the Visual Impact of Classification Boundaries in Choropleth Maps .................................................. 371
Yifan Zhang and Ross Maciejewski

Small Multiples with Gaps ....................................................................................................................... 381
Wouter Meulemans, Jason Dykes, Aidan Slingsby, Cagatay Turkay, and Jo Wood

Map LineUps: effects of spatial structure on graphical inference ............................................................................... 391
Roger Beecham, Jason Dykes, Wouter Meulemans, Aidan Slingsby, Cagatay Turkay, and Jo Wood

Session: Evaluation

Evaluation of Graph Sampling: A Visualization Perspective ..................................................................................... 401
Yanhong Wu, Nan Cao, Daniel Archambault, Qaomu Shen, Huamin Qu, and Weiwei Cui

Many-to-Many Geographically-Embedded Flow Visualisation: An Evaluation .................................................. 411
Yalong Yang, Tim Dwyer, Sarah Goodwin, and Kim Marriott

An Evaluation of Visual Search Support in Maps .................................................................................. 421
Rudolf Netzel, Marcel Hlawatsch, Michael Burch, Sanjeev Balakrishnan, Hansjörg Schmauder, and Daniel Weiskopf
Evaluating the Impact of Binning 2D Scalar Fields
Lace Padilla, P. Samuel Quinan, Miriah Meyer, and Sarah H. Creem-Regehr

Session: Immersive Analytics

Immersive Collaborative Analysis of Network Connectivity: CAVE-style or Head-Mounted Display?
Maxime Cordeil, Tim Dwyer, Karsten Klein, Bireswar Laha, Kim Marriott, and Bruce H. Thomas

Investigating the Use of a Dynamic Physical Bar Chart for Data Exploration and Presentation
Faisal Taher, Yvonne Jansen, Jonathan Woodruff, John Hardy, Kasper Hornbaek, and Jason Alexander

Embedded Data Representations
Wesley Willett, Yvonne Jansen, and Pierre Dragicevic

The Attraction Effect in Information Visualization
Evanthia Dimara, Anastasia Bezerianos, and Pierre Dragicevic

Session: Storytelling / Presentation

Iterating Between Tools to Create and Edit Visualizations
Alex Bigelow, Steven Drucker, Danyel Fisher, and Miriah Meyer

Data-Driven Guides: Supporting Expressive Design for Information Graphics
Nam Wook Kim, Eston Schweickart, Zhicheng Liu, Mira Dontcheva, Wilmot Li, Jovan Popovic, and Hanspeter Pfister

Authoring Data-Driven Videos with DataClips
Fereshteh Amini, Nathalie Henry Riche, Bongshin Lee, Andres Monroy-Hernandez, and Pourang Irani

Temporal Summary Images: An Approach to Narrative Visualization via Interactive Annotation Generation and Placement
Chris Bryan, Kwan-Liu Ma, and Jonathan Woodring

Colorgorical: Creating discriminable and preferable color palettes for information visualization
Connor C. Gramazio, David H. Laidlaw, and Karen B. Schloss

Session: Graphs

Probabilistic Graph Layout for Uncertain Network Visualization
Christoph Schulz, Arlind Nocaj, Jochen Goertler, Oliver Deussen, Ulrik Brandes, and Daniel Weiskopf

Towards Unambiguous Edge Bundling: Investigating Confluent Drawings for Network Visualization
Benjamin Bach, Nathalie Henry Riche, Christophe Hurter, Kim Marriott, and Tim Dwyer

Session: Visualization Education

VLAT: Development of a Visualization Literacy Assessment Test
Sukwon Lee, Sung-Hee Kim, and Bum Chul Kwon

VIZITCARDS: A Card-Based Toolkit for Infovis Design Education
Shiqing He and Eytan Adar

booc.io: An Education System with Hierarchical Concept Maps and Dynamic Non-linear Learning Plans
Michail Schwab, Hendrik Strobelt, James Tompkin, Colin Fredericks, Connor Huff, Dana Higgins, Anton Strezhnev, Mayya Komisarchik, Gary King, and Hanspeter Pfister

Exploring the Possibilities of Embedding Heterogeneous Data Attributes in Familiar Visualizations
Mona Hosseinkhani Loorak, Charles Perin, Christopher Collins, and Sheelagh Carpendale

Session: Applications

Screenit: Visual Analysis of Cellular Screens
Kasper Dinkla, Hendrik Strobelt, Bryan Genest, Stephan Reiling, Mark Borowsky, and Hanspeter Pfister
IEEE Scientific Visualization Conference

Session: Biological, Molecular and Shape Visualization

Molecular Surface Maps ................................................................. 701
Michael Krone, Florian Frieß, Katrin Scharnowski, Guido Reina, Silvia Fademrecht, Tobias Kulschewski, Jürgen Pleiss, and Thomas Ertl

Synteny Explorer: An Interactive Visualization Application for Teaching Genome Evolution .............................. 711
Chris Bryan, Gregory Guterman, Kwan-Liu Ma, Harris Lewin, Denis Larkin, Jaebum Kim, Jian Ma, and Marta Farré

Visualizing Shape Deformations with Variation of Geometric Spectrum ......................................................... 721
Jixiu Hu, Hajar Hamidian, Zichun Zhong, and Jing Hua

Physics-based Visual Characterization of Molecular Interaction Forces ......................................................... 731
Pedro Hermosilla, Jorge Estrada, Víctor Guallar, Timo Ropinski, Àlvar Vinacua, and Pere-Pau Vázquez

Session: Biomedical Visualization

PelVis: Atlas-based Surgical Planning for Oncological Pelvic Surgery ............................................................... 741
Noeska Smit, Kai Lawonn, Annelot Krima, Marco DeRuiter, Hessam Sokooti, Stefan Bruckner, Elmar Eismann, and Anna Vilanova

Corresponding Supine and Prone Colon Visualization Using Eigenfunction Analysis and Fold Modeling ............... 751
Saad Nadeem, Joseph Marino, Xianfeng Gu, and Arie Kaufman
Combined Visualization of Vessel Deformation and Hemodynamics in Cerebral Aneurysms................................. 761
Monique Meuschke, Samuel Voss, Oliver Beuing, Bernhard Preim, and Kai Lawonn

Session: Design Studies and Evaluation

Visualization as Seen Through its Research Paper Keywords ................................................................. 771
Petra Isenberg, Tobias Isenberg, Michael Sedlmair, Jian Chen, and Torsten Möller

Comparing Cross-Sections and 3D Renderings for Surface Matching Tasks using Physical Ground Truths .......... 781
Andreas J. Lind and Stefan Bruckner

Urban Pulse: Capturing the Rhythm of Cities ............................................................................................. 791
Fabio Miranda, Harish Doraiswamy, Marcos Lage, Kai Zhao, Bruno Gonçalves, Luc Wilson, Mondrian Hsieh, and
Claudio T. Silva

Visualization and Extraction of Carvings for Heritage Conservation ....................................................... 801
Kai Lawonn, Erik Trostmann, Bernhard Preim, and Klaus Hildebrandt

In Situ Distribution Guided Analysis and Visualization of Transonic Jet Engine Simulations .......................... 811
Soumya Dutta, Chun-Ming Chen, Gregory Heinlein, Han-Wei Shen, and Jen-Ping Chen

Session: Ensembles, Multi-variate and Comparative

Decal-maps: Real-Time Layering of Decals on Surfaces for Multivariate Visualization ............................... 821
Allan Rocha, Usman Alim, Julio Daniel Silva, and Mario Costa Sousa

Time-hierarchical Clustering and Visualization of Weather Forecast Ensembles ......................................... 831
Florian Ferstl, Mathias Kanzler, Marc Rautenhaus, and Rudiger Westermann

Visualization of Time-Varying Weather Ensembles Across Multiple Resolutions ....................................... 841
Ayan Biswas, Guang Lin, Xiaotong Liu, and Han-Wei Shen

A Fractional Cartesian Composition Model for Semi-spatial Comparative Visualization Design .................. 851
Ivan Kolesár, Stefan Bruckner, Ivan Viola, and Helwig Hauser

Session: Presentation, Production, and Dissemination

Vol2velle: Printable Interactive Volume Visualization ....................................................................................... 861
Sergej Stoppel and Stefan Bruckner

Categorical Colormap Optimization with Visualization Case Studies ......................................................... 871
H. Fang, S. Walton, E. Delahaye, J. Harris, D. A. Storchak, and M. Chen

Hybrid Tactile/Tangible Interaction for 3D Data Exploration ........................................................................... 881
Lonni Besançon, Paul Issartel, Mehdi Ammi, and Tobias Isenberg

GlyphLens: View-dependent Occlusion Management in the Interactive Glyph Visualization ........................ 891
Xin Tong, Cheng Li, and Han-Wei Shen

Session: Rendering

Correlated Photon Mapping for Interactive Global Illumination of Time-Varying Volumetric Data ............... 901
Daniel Jonsson and Anders Ynnerman

A Versatile and Efficient GPU Data Structure for Spatial Indexing ............................................................. 911
Jens Schneider and Peter Rautek

Progressive Direct Volume-to-Volume Transformation ..................................................................................... 921
Steffen Frey and Thomas Ertl

OSPRay – A CPU Ray Tracing Framework for Scientific Visualization .......................................................... 931
I Wald, GP Johnson, J Amstutz, C Brownlee, A Knoll, J Jeffers, J Günther, and P Navratile

viii
Session: Topology-based Techniques

Topological Analysis of Inertial Dynamics ................................................................. 950
Antoni Sagristà Sellés, Stefan Jordan, Andreas Just, Fábio Dias, Gustavo Nonato, and Filip Sadlo

Jacobi Fiber Surfaces for Bivariate Reeb Space Computation ........................................ 960
Julien Tierny and Hamish Carr

Backward Finite-Time Lyapunov Exponents in Inertial Flows ........................................... 970
Tobias Günther and Holger Theisel

Session: Vectors and Tensors

Glyphs for General Second-Order 2D and 3D Tensors .................................................. 980
Tim Gerrits, Christian Rössl, and Holger Theisel

Hairy Slices: Evaluating the Perceptual Effectiveness of Cutting Plane Glyphs for 3D Vector Fields .................................................. 990
Andrew H. Stevens, Thomas Butkiewicz, and Colin Ware

Author Index .............................................................................................................. xxvi