**VIS Program**

**Saturday, October 19**
9:00AM-5:40PM
- Doctoral Colloquium (by invitation only) (location: By invitation only)

**Sunday, October 20**
9:00AM-12:20PM
- Workshop: Urban Data Visualization (CityVis)—Focus: The Role of the Citizen (location: Room 1)
- Tutorial: Topological Data Analysis Made Easy with the Topology ToolKit, A Sequel (location: Room 2)
- Tutorial: Visualizing Multivariate Networks (location: Room 8)
- Workshop: Visualization for Communication (VisComm) (location: Room 15)

**Monday, October 21**
9:00AM-12:20AM
- Workshop: DSIA 2019: Data Systems for Interactive Analysis (location: Room 1)
- Tutorial: Visual Analysis and Design (location: Room 2)
- Tutorial: Statistical Data Representation, Visualization, and Uncertainty Analysis (location: Room 8)
- Tutorial: Beyond Paper Types: How to Evaluate and Communicate VIS Research Contributions (location: Room 15)

**Tuesday, October 22**
9:00AM-5:40PM
- Posters (location: Exhibition Hall A)
- VAST Challenge (location: Ballroom C)

**Wednesday, October 23**
2:20-3:50PM
- Application Spotlight: Visualization in meteorology and climate sciences: recent research and open challenge (location: Room 15)
- Break
3:50-4:10PM
- Application Spotlight: Visual Analysis of Air and Maritime Trajectory Data (location: Room 15)

**Thursday, October 24**
7:00-9:00PM
- Opening Reception (location: Exhibition Hall A)

**Friday, October 25**
7:00-9:00PM
- Application Spotlight: Visualization Software Development for Researchers and End Users - from general issues to specifics challenges for medical (location: Room 15)
- Break
Tuesday, October 22

8:30-10:00AM
- VIS Welcome, VGTC Awards, TOT Awards (location: Ballroom ABC)
9:00AM-5:40PM
- Posters (location: Exhibition Hall A)
10:00-11:00AM
- Break
11:20AM-12:20PM
- VIS Keynote (location: Ballroom ABC)
12:20-2:40PM
- Lunch Break
2:40-2:50PM
- A Tour of VAST (location: Ballroom A)
- Provocations (location: Ballroom B)
- Scalar Topology (location: Ballroom C)
- Short Papers: Novel Interfaces (location: Room 1)
2:50-3:50PM
- Panel: Exploring Reproducibility in VIS: Expanding on the National Academies' Report on Reproducibility and Replicability in Science (location: Room 2+3)
- SciVis Contest (location: Room 8+15)
3:50-4:10PM
- Break
4:10-5:40PM
- VIS Meets Machine Learning (location: Ballroom A)
- Features and Topology (location: Ballroom B)

Wednesday, October 23

9:00-10:30AM
- Multiscale Visualization (location: Ballroom A)
- Drawing Nodes and Edges (location: Ballroom B)
- Flow (location: Ballroom C)
- Short Papers: Perception, Cognition, and Visualization Design (location: Room 1)
- ViSec (location: Room 2+3)
- VISAP Session 1 (location: Room 8+15)
10:30-10:50AM
- Break
10:50AM-12:20PM
- VAST Opening (location: Ballroom A)
- InfoVis Opening (location: Ballroom B)
- SciVis Opening (location: Ballroom C)
2:20-3:50PM
- Evaluation & Reproducibility (location: Ballroom A)
- Animation and Sports (location: Ballroom B)
- Multivariate & Multidimensional Data (location: Ballroom C)
- CG&A Session 1 (location: Room 8+15)
- Application Spotlight: Does AI mean data visualization is dead? (location: Room 1)
- ViSec (location: Room 2+3)
3:50-4:10PM
- Break
4:10-5:40PM
- VizSec (location: Room 2+3)
- Short Papers: Perception, Cognition, and Visualization Design (location: Room 1)
- ViSec (location: Room 2+3)
Thursday, October 24

9:00-10:30AM
- XAI and Fairness (location: Ballroom A)
- Vis for Software and Systems (location: Ballroom B)
- Large Data and Dimensionality Reduction (location: Ballroom C)
- VISAP Session 2 (location: Room 2+3)
- SIGGRAPH Session (location: Room 8+15)

9:00AM-12:20PM
- Posters + Networking + Hiring events (location: Ballroom ABC)

10:30-10:50AM
- Break

12:20-2:20PM
- Scatterplots (location: Ballroom A)
- Volume Visualization (location: Ballroom B)
- GeoVisualization (location: Ballroom C)
- CG&A Session 2 (location: Room 2+3)

2:20-3:50PM
- Lunch Break
- VIS 2020 Kick-off Meeting (location: Ballroom A)

3:50-4:10PM
- Ensembles & Uncertainty (location: Ballroom A)

4:10-5:40PM
- FF (Thu & Fri Sessions) (location: Ballroom A)

5:10-7:00PM
- Break

5:40-7:00PM
- Posters + Networking + Hiring events (location: Ballroom ABC)

7:00-9:00PM
- VIS Dinner Reception (location: Ballroom ABC)

Friday, October 25

9:00-10:30AM
- Influencers (location: Ballroom A)
- Color (location: Ballroom B)
- Searching & Querying (location: Ballroom C)
- Short Papers: Scalar, Vector, and Tensor Fields (location: Room 1)
- Application Spotlight: Feature-based Visual Interactive Systems to Optimize Decision Making (location: Room 2+3)

10:30-10:50AM
- Break

11:00-12:00PM
- VIS Capstone (location: Ballroom ABC)

12:00-12:30PM
- VIS Closing (location: Ballroom ABC)
Please note that sessions are composed of papers mixed from the VAST [V], InfoVis [I], and SciVis [S] conferences, and are marked as such preceding the paper titles. In addition, the final publication venue for each paper is marked in parentheses following the title:

- (J) TVCG journal special issue (SI) papers
- (T) Previously published TVCG journal papers presented at VIS
- (C) Conference papers
**WEDNESDAY, OCTOBER 23**

**9:00-10:30AM**
Room: Ballroom C
Session Chair: Robert S Laramee

**[S]** Accelerated Monte Carlo Rendering of Visible-Time Luminance Expansions (T)
Authors: Irene Baoxu Bu, Markus Graser, Tobias Größer

**[D]** Detection and Visualization of Splat and Anti-Cluster in Turbulent Flows (T)
Authors: Bhaskar Naogaonkar, Martha Namyari, Jochen Pfützner, Janice Tiel, Stefan Gutschell, Gerit Schuermann

**[A]** Analysis of the Near-Wall Flow in a Turbulent Cascade by Splat Visualization (T)
Authors: Bhaskar Naogaonkar, Gerit Schuermann, Stefan Gutschell, Jordi Vento-Matas, Lewis Koschuch, Jochen Pfützner

**[E]** Extensive-Scale Stochastic Particle Tracking for Uncertain Unsteady Flow Visualization and Analysis (T)
Authors: Heung Guo, Wondong Han, Sangjun Lee, Jun-Ho Shin, On Myong Kim, Constantineou, Charles Liu, Tien Petroski

**[F]** FlowNet: A Deep Learning Framework for Clustering and Selection of Streamlines and Stream Surfaces (T)
Authors: Jun Heo, Jie Tao, Zhaoli Wang

**[G]** Key Object-Interaction Motifs (T)
Authors: Tobias Größer, Inge Kotelari

**WEDNESDAY, OCTOBER 23**

**9:00-10:30AM**
Room: Room 8+15
Session Chair: Colin Ware

**A Markov Model of Users' Interactive Behavior in Scatterplots (C)**
Authors: Alexander Ivanov, Kurtis Danyluk, Christian Jacob, Wesley Willett

**Gradual-Dependent Rendering of Parallel Coordinates to Reduce Density Distortion and Ghost Clusters (C)**
Authors: David Pomerenne, Frederik L. Dusing, Daniel Kair, Johannes Fach, Michael Blumenschein

**Evaluating Streaming Strategies of Star Glyphs (C)**
Authors: Kathleen Miles, Yuan Zhang, Johannes Fach, Michael Blumenschein

**Intensive Visualization of Hierarchical Quantitative Data: an Evaluation (C)**
Authors: Linda Woodruff, Ying Yang, Kim Merritt

**Evidence for Area as the Primary Visual Cue in Pie Charts (C)**
Authors: Robert Kosara

**Visual cues in estimation of part-to-whole comparison (C)**
Authors: Stephen Holcomb

**Towards a Design Space for Mitigating Cognitive Bias in Visual Analytics (C)**
Authors: Emily Wall, John Staake, Alex Evertult

**Thumbnails for Data Stories: Survey of Current Practice (C)**
Authors: Heypun Kim, Jaessung YJ, Kyeong Ahn, Sanghoon Ru, Matthew Breiteneuer, Jun-Chai Rhee

**Towards Quantifying multiple view layouts in visualization as seen from research publications (C)**
Authors: Huyper Mathall Kinnunen, Jonathan C. Roberts

**WEDNESDAY, OCTOBER 23**

**10:50AM-12:20PM**
Room: Ballroom C
Session Chair: Lars Linnhean

**Multivariate & Multidimensional Data**

**Session Chair: Colin Ware**

**A Markov Model of Users' Interactive Behavior in Scatterplots (C)**
Authors: Alexander Ivanov, Kurtis Danyluk, Christian Jacob, Wesley Willett

**Gradual-Dependent Rendering of Parallel Coordinates to Reduce Density Distortion and Ghost Clusters (C)**
Authors: David Pomerenne, Frederik L. Dusing, Daniel Kair, Johannes Fach, Michael Blumenschein

**Evaluating Streaming Strategies of Star Glyphs (C)**
Authors: Kathleen Miles, Yuan Zhang, Johannes Fach, Michael Blumenschein

**Intensive Visualization of Hierarchical Quantitative Data: an Evaluation (C)**
Authors: Linda Woodruff, Ying Yang, Kim Merritt

**Evidence for Area as the Primary Visual Cue in Pie Charts (C)**
Authors: Robert Kosara

**Visual cues in estimation of part-to-whole comparison (C)**
Authors: Stephen Holcomb

**Towards a Design Space for Mitigating Cognitive Bias in Visual Analytics (C)**
Authors: Emily Wall, John Staake, Alex Evertult

**Thumbnails for Data Stories: Survey of Current Practice (C)**
Authors: Heypun Kim, Jaessung YJ, Kyeong Ahn, Sanghoon Ru, Matthew Breiteneuer, Jun-Chai Rhee

**Towards Quantifying multiple view layouts in visualization as seen from research publications (C)**
Authors: Huyper Mathall Kinnunen, Jonathan C. Roberts
Wednesday, October 23
2:20-3:50 PM
Room: Ballroom A

[II] Construct-A-Vis: A New-Form Visualization Creative for Children (I)
Authors: Fei Xing, Johanna Ziegmann, Ulrike Pfeil, Gemini Sanderson, Harald Berberer, Lina Hinrichs

[II] Critical Reflections of Visualization Authoring Systems (I)
Authors: Andrea S. Granzer, Danghoi Lee, Donghui Ren, Jeffrey Heer, John Stasko, John B Thompson, Matthew Driscoll, Zhicheng Liu

[II] Detailing Complex Visualizations in Science Museums - An Empirical Study (I)
Authors: Juye Wu, Ruan-Lua Ma, Jennifer Fisher

[II] Investigating Direct Manipulation of Graphical Encodings as a Method for User Interaction (I)
Authors: Bekadar Saker, Samuel Harms, Charles Perot, Alex Eckert

[II] Artifact-Based Rendering: Harnessing Natural and Traditional Visual Media for More Expressive and Engaging 3D Visualizations (I)
Authors: Sathi A John, Francois Samet, Leong Ahoon, Daniel Olson, Andrew Sells, Bridget Hamson, Philipp Behr, Christoph Lange, Daniel F. Aberle

[II] Geographic Interaction Network Wandering (II)
Authors: Alix Bigeaud, Carolina Nolet, Miriah Meyer, Alexander Lee

[II] Preserving Command Line Workflows for a Package Management using ASCII DAG Visualization (II)
Authors: Kathryn P Williams, Alex Bigelow, Katherine Isaacs

[II] How People Visually Represent Discrete Constraint Problem (II)
Authors: Dong Sun, Renfei Huang, Yong Wang, Yuanzhe Chen, Jia Zeng, Mingxuan Yuan, Ting-Chuen Pong, Huamin Qu

[II] sPortfolio: Stratified Visual Analysis of Stock Portfolios (II)
Authors: Xu Zhu, Miguel A. Nacenta, Özgür Akgun, Peter Nightingale

[II] PlanningVis: A Visual Analytics Approach to Production Planning in Smart Factories (II)
Authors: Ke Xu, Yun Wang, Leni Yang, Yifang Wang, Bo Qiao, Si Qin, Yong Xu, Haidong Zhang, Huamin Qu


[II] LightGuider: Guiding Interactive Lighting Design using Suggestions, Provenance, and Quality Visualization (D)

Thursday, October 24
2:20-3:50 PM
Room: Ballroom C

[II] FeatureExplorer: Interactive Feature Selection and Exploration of Regression Models for Hyperspectral Images (C)

[II] TeleGam: Combining Visualization and Verbalization for Interpretable Machine Learning (C)

[II] SANVis: Visual Analytics for Understanding Self-Attention Networks (C)

[II] Visualizing RNN States with Predictive Semantic Encodings (C)

[II] Disentangled Representation of Data Distributions in Scatterplots (C)

[II] Exploring Complexities of Visualizations in Science Museums: An Empirical Study (C)

[II] Critical Reflections of Visualization Authoring Systems (C)

[II] Investigating Direct Manipulation of Graphical Encodings as a Method for User Interaction (C)

[II] Planning and Situational Awareness

[II] FeatureExplorer: Interactive Feature Selection and Exploration of Regression Models for Hyperspectral Images (C)
### Large Data and Dimensionality Reduction

**Room: Ballroom C**

**Session Chair: Michael Sedlmair**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[V] Exploring the Sensitivity of Choropleths under Attribute Uncertainty (T)</td>
<td>Authors: Zhaosong Huang, Yafeng Lu, Elizabeth A. Mack, Wei Chen, Ross Maciejewski</td>
</tr>
<tr>
<td>[V] A Visual Analytics System for Exploring, Monitoring, and Forecasting Road Traffic Congestion (T)</td>
<td>Authors: Changjie Lin, Yousun Kim, Seungmin JY, Dongiho Kim, Ross Maciejewski, David Elbert, Sungahn Ko</td>
</tr>
<tr>
<td>[I] SmartCube: An Adaptive Data Management Architecture for the Real-Time Visualization of Spatiotemporal Datasets (T)</td>
<td>Authors: Can Li, Cong Yu, Jianping Gao, Shanshan Yan</td>
</tr>
<tr>
<td>[S] Real-Time Exploration of Large Spatiotemporal Datasets based on Order Statistics (T)</td>
<td>Authors: Clerc L. Pelins, Monse Ferrera, Julio L. Cortes</td>
</tr>
<tr>
<td>[I] Active Visual Analytics of Air Pollution Propagation (T)</td>
<td>Authors: Zhenang Deng, Shi Qian, Zhihe Chen, Nenad Li, Zhihui Wang, Jie Bai, Zhou Zhang, Zheyi Wu</td>
</tr>
<tr>
<td>[I] (0D, Hopscotch): balancing simplicity with 0DHashes for 0D bundling (T)</td>
<td>Authors: Yan Liu, Xi Lu, Meng Chen, Arpan Manger, Bao Qin, Qiu Lin, Chao Chen</td>
</tr>
<tr>
<td>[I] Landscape-Space-Time Cube &amp; Conceptual Framework for Systematic Analysis of Texts in Space and Time (T)</td>
<td>Authors: Je Li, Shining Chen, Wei Chen, Gerhard A. Antonides, Notalet Andaśkina</td>
</tr>
<tr>
<td>[V] GPGPU Linear Complexity tSNE Optimization (J)</td>
<td>Authors: Mohammad Raji, Alok Hota, Tanner Hobson, Jian Huang</td>
</tr>
<tr>
<td>[V] OD Morphing: balancing simplicity with faithfulness for OD bundling (J)</td>
<td>Authors: Thom Castermans, Kevin Verbeek, Bettina Speckmann, Michel A. Westenberg, Rob Koopman, Shenghui Wang, Hein van den Berg, Arianna Betti</td>
</tr>
<tr>
<td>[I] Semantics-Space-Time Cube &amp; Conceptual Framework for Systematic Analysis of Texts in Space and Time (T)</td>
<td>Authors: Alihossein, Taher Hesham, Jian Huang</td>
</tr>
<tr>
<td>[I] SolarView: Low Distortion Radial Embedding with a Focus (T)</td>
<td>Authors: Zhe Tang, Shufei Wang, Jie Bai, Jie Bai, Qian Li, Wei Chen</td>
</tr>
</tbody>
</table>

**Session Chair: Markus Hadwiger**

### Geovisualization

**Room: Ballroom A**

**Session Chair: Anastasia Bezerianos**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[I] P3: Portable Progressive Parallel Processing Pipeline for Interactive Data Analysis and Visualization (T)</td>
<td>Authors: Ketevan Shurayeva, Michael Sedlmair, Paul Curran, Daniel Moerdijk, Suhas Krishna, Alexander Belyaev, Ondrej Svec, Matthieu Guimbretière</td>
</tr>
<tr>
<td>[V] A Visual Analytics System for Exploring, Monitoring, and Forecasting Road Traffic Congestion (T)</td>
<td>Authors: Changjie Lin, Yousun Kim, Seungmin JY, Dongiho Kim, Ross Maciejewski, David Elbert, Sungahn Ko</td>
</tr>
<tr>
<td>[I] Active Visual Analytics of Air Pollution Propagation (T)</td>
<td>Authors: Zhenang Deng, Shi Qian, Zhihe Chen, Nenad Li, Zhihui Wang, Jie Bai, Zhou Zhang, Zheyi Wu</td>
</tr>
<tr>
<td>[I] (0D, Hopscotch): balancing simplicity with 0DHashes for 0D bundling (T)</td>
<td>Authors: Yan Liu, Xi Lu, Meng Chen, Arpan Manger, Bao Qin, Qiu Lin, Chao Chen</td>
</tr>
<tr>
<td>[I] Landscape-Space-Time Cube &amp; Conceptual Framework for Systematic Analysis of Texts in Space and Time (T)</td>
<td>Authors: Je Li, Shining Chen, Wei Chen, Gerhard A. Antonides, Notalet Andaśkina</td>
</tr>
<tr>
<td>[V] Semantics-Space-Time Cube &amp; Conceptual Framework for Systematic Analysis of Texts in Space and Time (T)</td>
<td>Authors: Alihossein, Taher Hesham, Jian Huang</td>
</tr>
<tr>
<td>[V] OD Morphing: balancing simplicity with faithfulness for OD bundling (J)</td>
<td>Authors: Thom Castermans, Kevin Verbeek, Bettina Speckmann, Michel A. Westenberg, Rob Koopman, Shenghui Wang, Hein van den Berg, Arianna Betti</td>
</tr>
<tr>
<td>[V] SolarView: Low Distortion Radial Embedding with a Focus (J)</td>
<td>Authors: Zhe Tang, Shufei Wang, Jie Bai, Jie Bai, Qian Li, Wei Chen</td>
</tr>
</tbody>
</table>

**Session Chair: Nathalie Riche**

### Large Data and Dimensionality Reduction

**Room: Ballroom C**

**Session Chair: Leilani Battle**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[S] FeatureLego: Volume Exploration Using Exhaustive Clustering of Super-Voxels (T)</td>
<td>Authors: Tobias Rapp, Christoph Peters, Carsten Dachsbacher</td>
</tr>
<tr>
<td>[I] Uncertainty-Aware Principal Component Analysis (J)</td>
<td>Authors: Deviceic Sethy, Toshihiro Inoue, Dinesh Kurup, David Maciejewski, Oliver Siewiorski</td>
</tr>
<tr>
<td>[S] Void-and-Cluster Sampling of Large Scattered Data and Trajectories (J)</td>
<td>Authors: Yuxin Ma, Anthony K. H. Tung, Wei Wang, Xiang Gui, Cheng Liu, Jie Lin, Wei Chen</td>
</tr>
<tr>
<td>[I] Data Sampling in Multi-view and Multi-class Scatterplots via Set Cover Optimization (J)</td>
<td>Authors: Mustafa Nejat, Mehmet Kansak, Hunter O'Neil, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[S] Interactive Visualization and On-Demand Processing of Large Volume Data: A Fully GPU-Based Out-Of-Core Approach (T)</td>
<td>Authors: Shreeraj Jadhav, Saad Nadeem, Arie Kaufman</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[I] A Recursive Subdivision Technique for Sampling Multi-class Scatterplots (T)</td>
<td>Authors: Xin Chen, Tong Gu, Jian Zhang, Baoqian Chen, Or-Wing Fo, Oliver Siewiorski, Yushui Wang</td>
</tr>
<tr>
<td>[I] P5: Portable Progressive Parallel Processing Pipeline for Interactive Data Analysis and Visualization (T)</td>
<td>Authors: Ketevan Shurayeva, Michael Sedlmair, Paul Curran, Daniel Moerdijk, Suhas Krishna, Alexander Belyaev, Ondrej Svec, Matthieu Guimbretière</td>
</tr>
<tr>
<td>[S] Interactive Visualization and On-Demand Processing of Large Volume Data: A Fully GPU-Based Out-Of-Core Approach (T)</td>
<td>Authors: Jonathan Sarton, Nicolas Courilleau, Yannick Remion, Laurent Lucas</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[I] FeatureLego: Volume Exploration Using Exhaustive Clustering of Super-Voxels (T)</td>
<td>Authors: Tobias Rapp, Christoph Peters, Carsten Dachsbacher</td>
</tr>
<tr>
<td>[I] Improving the Robustness of SceneHubs (J)</td>
<td>Authors: Yushui Wang, Jiao Wang, Tingting Liu, Michael Carrell, Zhongyi Chang, Oliver Siewiorski, Michael Sedlmair</td>
</tr>
<tr>
<td>[I] P3: Portable Progressive Parallel Processing Pipeline for Interactive Data Analysis and Visualization (T)</td>
<td>Authors: Ketevan Shurayeva, Michael Sedlmair, Paul Curran, Daniel Moerdijk, Suhas Krishna, Alexander Belyaev, Ondrej Svec, Matthieu Guimbretière</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[S] Interactive Visualization and On-Demand Processing of Large Volume Data: A Fully GPU-Based Out-Of-Core Approach (T)</td>
<td>Authors: Jonathan Sarton, Nicolas Courilleau, Yannick Remion, Laurent Lucas</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[I] A Recursive Subdivision Technique for Sampling Multi-class Scatterplots (T)</td>
<td>Authors: Xin Chen, Tong Gu, Jian Zhang, Baoqian Chen, Or-Wing Fo, Oliver Siewiorski, Yushui Wang</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[I] A Recursive Subdivision Technique for Sampling Multi-class Scatterplots (T)</td>
<td>Authors: Xin Chen, Tong Gu, Jian Zhang, Baoqian Chen, Or-Wing Fo, Oliver Siewiorski, Yushui Wang</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
<tr>
<td>[I] P3: Portable Progressive Parallel Processing Pipeline for Interactive Data Analysis and Visualization (T)</td>
<td>Authors: Ketevan Shurayeva, Michael Sedlmair, Paul Curran, Daniel Moerdijk, Suhas Krishna, Alexander Belyaev, Ondrej Svec, Matthieu Guimbretière</td>
</tr>
<tr>
<td>[I] Mapping and Visualizing Deep-learning Urban Neighborhoods (T)</td>
<td>Authors: Tobias Krämer, Suguh Toyama, Oliver Siewiorski, Wei Chen</td>
</tr>
</tbody>
</table>

**Session Chair: Anastasia Bezerianos**
THURSDAY, OCTOBER 24
4:10-5:40PM Room: Room 1
Short Papers: Multi-Dimensional Data, Time Series, Graphs, and Trees
Session Chair: Tobias Schötz

Interpreting Detections in Dimensionality Reduction by Superimposing Neighborhood Graphs (S)
Authors: Behzad College, Laurent Vallières, Sylvain Lambelets, Denys D Aydili

Hi-Q Maps: An Interactive Visualization Technique for Multi-dimensional Categorical Data. (S)
Authors: Raul Mohammad Beer, Benjamín Modan

Conditional Parallel Coordinates (C)
Authors: Daniel Weinke

Towards Enhancing Radial Analysis and Interpretation (O)
Authors: Marc Anglès, Giacomo Biasotti, Siyao Li, Alessia Palmacci, Giuseppe Santucci

Time Varying Prevalence Tag Maps (T)
Authors: Mathis Reckzehl, Stefan Jänicke

Nonlinear TimeSeries Exploration Through Hierarchical Clustering (O)
Authors: Nicholas Rota, Noémi Sabaudo, Katy Mearsough, Michael Breitlich, Johanna Beyer

Interactive Bicluster Aggregation in Bipartite Graphs (C)
Authors: Mayuram San, David Kang, (Jan) Chris North, Karen Runions

Overlap-Free Drawing of Generalized Pythagoras Trees for Hiernarchy Visualization (C)
Authors: Tanja Moser, Michael Buch, (Tri) van Brebem, (Jan) Peters, (Tri) van Benthem, Daniel Weiskopf

SAX Navigator: Time Series Exploration Through Hierarchical Clustering (C)
Authors: Melanie Tory, Vidya Setlur

Time Varying Predominance Tag Maps (T)
Authors: Mathis Reckzehl, Stefan Jänicke

Unsteady Flow Visualization via Physics-based Pathline Exploration (C)
Authors: Teodoro Collin, Charisee Chiw, L. Ridgway Scott, John Reppy, Gordon L Kindlmann

MetricsVis: A Visual Analytics Framework for Evaluating Individual, Team, and Organization Performance (C)
Authors: Zeyu Li, Changhong Zhang, Shichao Jia, Jiawan Zhang

Evaluating Gradient Perception in Color-coded Scalar Fields (C)
Authors: Stefan Zellmann, Deborah Meurer, Ulrich Lang

Efficient Space Skipping and Adaptive Sampling of Unstructured Volumes using Hardware Accelerated Ray Tracing (C)
Authors: Nate Merritt, Will Oliver, Nigel Walk, Victor Mani

Multiphase Flow Visualization via Physics-based Pathline Exploration (C)
Authors: Duong Nguyen, Lei Shi, Yue Su, Yifan Hu, Hanghang Tong, Chaoli Wang, Tong Yang, Deyun Wang, Shuo Liang

Evaluating Gradient Perception in Color-coded Scalar Fields (C)
Authors: Khalid Reda, Michael L. Papka

Galex: Exploring the Evolution and Intersection of Disciplines (C)
Authors: Martin Reckziegel, Stefan Jänicke

Interpreting Distortions in Dimensionality Reduction by Superimposing Neighborhood Graphs (S)
Authors: Behzad College, Laurent Vallières, Sylvain Lambelets, Denys D Aydili

Creating an Interactive Visualization System for Uncertain Data (C)
Authors: Mingtu Li, Junsu Park, Tae-Hong Kwon, Soohyun Park, Kyung-Hwan Kim

Hybrid Grids for Sparse Volume Rendering (C)
Authors: Sebastian Zollmann, Deborah Meurer, Ulrich Lang

Efficient Space Skipping and Adaptive Sampling of Unstructured Volumes using Hardware Accelerated Ray Tracing (C)
Authors: Nate Merritt, Will Oliver, Nigel Walk, Victor Mani

Color Crafting: Automating the Construction of Designer-Quality Color Ramps (C)
Authors: Stephen Smart, Heke Wu, Danielle Albers Staff

Estimating color-contrast associations from Image statistics (O)
Authors: Regis Batham, Zachary Jegou, Laurent Leend, Kevin Schloss

The Effect of Color Scales on Climate Scientists’ Objective and Subjective Performance in Spatial Data Analysis Tasks (F)
Authors: Aniko Daugapins, Jorge Perez, Benoit Negretto, Kyungok Hong, Enrico Berardi, Claudia F. Silva

Measuring and Modeling the Fastest Detection Threshold Functions of Colormaps (F)
Authors: Colin Ware, Theodore T. Torstensson, Reena Raajesh, Florence Samet, Payam Ardeshir, David H. Rogers

Measuring the Effects of Scalar and Spherical Colormaps on Ensembles of SAR Imagery (F)
Authors: Jian Chen, Guohao Zhang, Wesley Chou, David H. Laidlaw, Alexander P. Auchus

THURSDAY, OCTOBER 24
9:00-10:30AM Room: Room 1
Short Papers: Multi-Dimensional Data, Time Series, Graphs, and Trees
Session Chair: Tobias Schötz

Searching the Visual Style and Structure of 3D Visualizations (O)
Authors: Emanuel Haque, Massimog Aguilera

The Role of Latency in Predicting Visual Search Behavior (O)
Authors: Lutfi Bahrb, B. Gordon Conroy, Anucla Mardalje, Nenad Chang, Michael Stonebraker

A Natural-language-based Visual Query Approach of Uncertain Human Trajectories (O)
Authors: Zhaosheng Huang, Ye Zhao, Wei Chen, Shengjie Gao, Kejie Yu, Weikai Xu, Mingliang Xu

You can't always sketch what you want: Understanding Sensemaking in Visual Query Systems (O)
Authors: Dariusz L. Slota, John Tan, Tassos Skopikas, Jawees Kim, Alfuye Parameswaran, Karrie Li

Doc or Not: Doc or Not: Design Considerations for Supporting Intent and Context in Conversational Analysis (O)
Authors: Weikun Tan, Yijie Seif

TopicSifter: Interactive Search Space Reduction Through Targeted Topic Modeling (C)
Authors: Hannah Kim, Dogil Choi, Barry Drake, Ken Cribett, Isaac Park

Evaluating Gradient Perception in Color-coded Scalar Fields (C)
Authors: Stefan Zellmann, Deborah Meurer, Ulrich Lang

Efficient Space Skipping and Adaptive Sampling of Unstructured Volumes using Hardware Accelerated Ray Tracing (C)
Authors: Nate Merritt, Will Oliver, Nigel Walk, Victor Mani

Hybrid Grids for Sparse Volume Rendering (C)
Authors: Sebastian Zollmann, Deborah Meurer, Ulrich Lang

Data-Driven Colormap Optimization for 3D Scalar Field Visualization (C)
Authors: Changmin Shen, Wei Shi, Weiming Zhang, Jian Zhang, Zhuoyu Yu, Yutian Wang

Evaluating Gradient Perception in Color-coded Scalar Fields (C)
Authors: Khalid Reda, Michael L. Papka

GoldMine: Analyzing Real and Simulated Galaxy Observations (C)
Authors: Nina McClure, Alfrith Meyer

Point Movement in a 3D L for High-order Film Visualization (C)
Authors: Tae-Hong Kwon, Tae-Hong Kwon

Uncertainty Flow Visualization via Physics-based Pathline Exploration (C)
Authors: Duong Nguyen, Le Zhang, Robert S. Lawrence, David Thompson, Rodrigo Ochando, Zheng Chen

Visualization of Symmetries in Fourth-Order Stiffness Tensors (C)
Authors: Zeyu Li, Changhong Zhang, Shichao Jia, Jiawan Zhang

Evaluating Gradient Perception in Color-coded Scalar Fields (C)
Authors: Stefan Zellmann, Deborah Meurer, Ulrich Lang

Efficient Space Skipping and Adaptive Sampling of Unstructured Volumes using Hardware Accelerated Ray Tracing (C)
Authors: Nate Merritt, Will Oliver, Nigel Walk, Victor Mani

Color Crafting: Automating the Construction of Designer-Quality Color Ramps (C)
Authors: Stephen Smart, Heke Wu, Danielle Albers Staff

Estimating color-contrast associations from Image statistics (O)
Authors: Regis Batham, Zachary Jegou, Laurent Leend, Kevin Schloss

The Effect of Color Scales on Climate Scientists’ Objective and Subjective Performance in Spatial Data Analysis Tasks (F)
Authors: Aniko Daugapins, Jorge Perez, Benoit Negretto, Kyungok Hong, Enrico Berardi, Claudia F. Silva

Measuring and Modeling the Fastest Detection Threshold Functions of Colormaps (F)
Authors: Colin Ware, Theodore T. Torstensson, Reena Raajesh, Florence Samet, Payam Ardeshir, David H. Rogers

Measuring the Effects of Scalar and Spherical Colormaps on Ensembles of SAR Imagery (F)
Authors: Jian Chen, Guohao Zhang, Wesley Chou, David H. Laidlaw, Alexander P. Auchus