

IEEE
Computer Graphics

AND APPLICATIONS

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Human-Centered Data Visualization

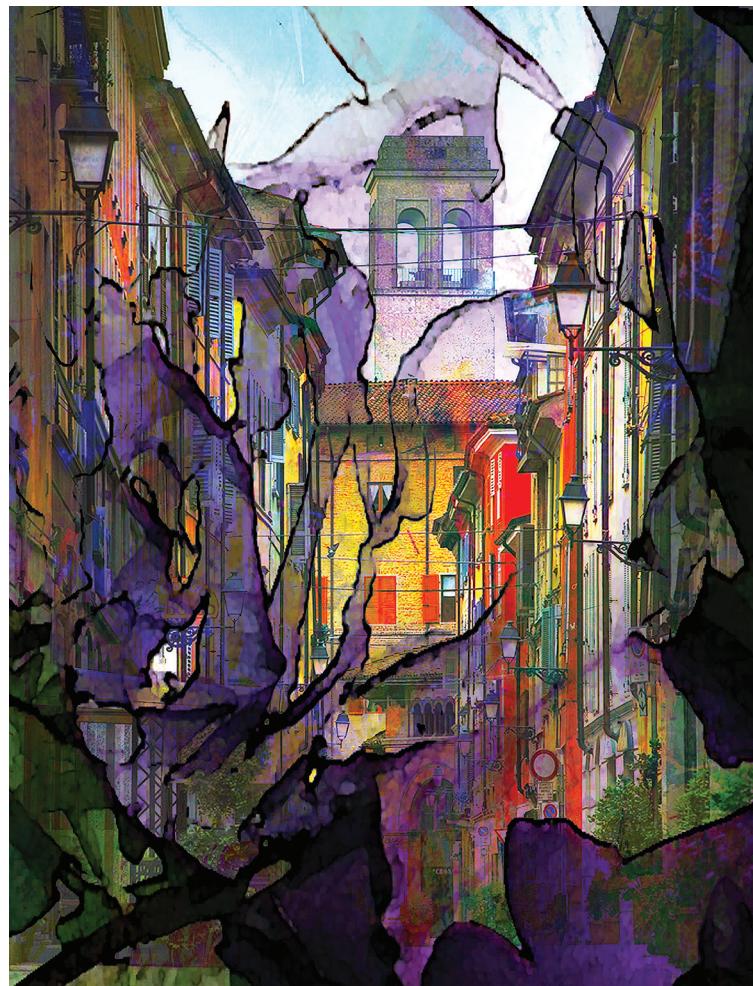
Theme Articles

Human-Centered Data Visualization

18 Guest Editors' Introduction

Xiaoru Yuan, Baoquan Chen, Koji Koyamada, and Issei Fujishiro

In the big data era, we are witnessing an unprecedented amount of information emerging from every aspect of society and daily life. Effectively handling and comprehending such data is key to gaining value and insight from them, and designing proper visualization and analysis tools is then critical for data interaction.



Cover Art: Living in Harmony, © 2012 Avani Aggarwal.

20 WordlePlus: Expanding Wordle's Use through Natural Interaction and Animation

Jaemin Jo, Bongshin Lee, and Jinwook Seo

The interactive authoring tool WordlePlus is an extension of Wordle, a popular visualization technique that correlates word frequency with display size. Via pen and touch interaction, WordlePlus gives users more control over wordles by allowing them to manipulate word placement and groupings and incorporate visuals and animation.

30 Key-Node-Separated Graph Clustering and Layouts for Human Relationship Graph Visualization

Takayuki Itoh and Karsten Klein

Many graph-drawing methods apply node-clustering techniques based on edge density to find tightly connected subgraphs and then hierarchically visualize the clustered graphs. The proposed graph visualization technique for attribute-embedded graphs separately visualizes the key nodes by accounting for a combination of connections and attributes.

42 ENTVis: A Visual Analytic Tool for Entropy-Based Network Traffic Anomaly Detection

Fangfang Zhou, Wei Huang, Ying Zhao, Yang Shi, Xing Liang, and Xiaoping Fan

Entropy-based traffic metrics have received much attention in network traffic anomaly detection, but practical issues still hinder widespread adoption. The visual analytic tool ENTVis provides coherent visual analysis that makes entropy-based traffic features more intuitive and helps users interpret network data and more quickly identify traffic anomalies.

51 Angle-Preserving Quadrilateral Mesh Parameterization

Wenyong Gong, Xiaohua Xie, Rui Ma, and Tieru Wu

In response to the growing use of quadrilateral meshes in real-world applications, a method for the direct parameterization of quadrilateral meshes is now necessary. The two proposed algorithms map a topological disk surface onto a Euclidean plane and map a topological sphere surface onto a unit sphere.

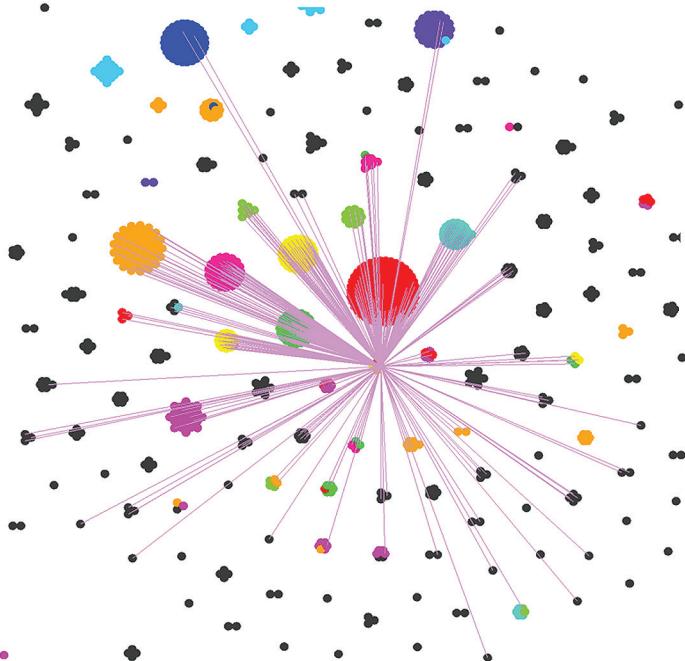


Feature

60 Vortex Filaments in Grids for Scalable, Fine Smoke Simulation

Zhang Meng, Si Weixin, Qian Yinling, Sun Hanqiu, Qin Jing, and Pheng-Ann Heng

Effectively simulating intensive and finely detailed smoke with fast increasing vortex filaments and smoke particles is still a research challenge. The proposed vortex filament-in-grids scheme balances simulation speed and the scale of details as well as reduces computation costs.



Page 30

Departments

2 About the Cover

Pass the Parcel

Gary Singh

4 From the Editor

M1C2: Experiments in Community Building through Collaborative Research Dissemination

L. Miguel Encarnaçāo

6 Art on Graphics

Slow Vis: Extending Opportunities for Insight and Understanding Over Time

Bruce D. Campbell and Francesca Samsel

11 Applications

CraMs: Craniometric Analysis Application Using 3D Skull Models

Paulo Dias, Luís Neves, Daniel Santos, Catarina Coelho, Maria Teresa Ferreira, Hélder Santos, Samuel Silva, and Beatriz Sousa Santos

69 Visualization Viewpoints

Visual Analytics for MOOC Data

Huamin Qu and Qing Chen

76 Dissertation Impact

Trends in Continuity and Interpolation for Computer Graphics

Francisco González García

83 Education

Educational Virtual-Wear Trial: More Than a Virtual Try-On Experience

Mingliang Cao, Yi Li, Zhigeng Pan, Josephine Csete, Shu Sun, Jie Li, and Yu Liu

90 Graphically Speaking

Beautiful Math, Part 5: Colorful Archimedean Tilings from Dynamical Systems

Peichang Ouyang, Weiguo Zhao, and Xuan Huang

CG&A Call for Papers, pp. 19, 29, 41

Computer Society Information, p. 59

Product and Advertiser Information, p. 82