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FacetClouds: exploring tag clouds for multi-dimensional data

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Authors: Manuela Waldner — Cure - Center for Usability Research and Engineering, Vienna and Vienna University of Technology
Johann Schrammel — Cure - Center for Usability Research and Engineering, Vienna
Michael Klein — Cure - Center for Usability Research and Engineering, Vienna
Katrín Kristjánsdóttir — Cure - Center for Usability Research and Engineering, Vienna
Dominik Unger — Cure - Center for Usability Research and Engineering, Vienna
Manfred Tscheligi — Cure - Center for Usability Research and Engineering, Vienna and ICT&S-Center, University of Salzburg

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Proceedings of the 2013 Graphics Interface Conference

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SESSION: **Invited paper**

Innovations in visualization
Sheelagh Carpendale
Pages: 1-8
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While information is a crucial part of people's everyday lives, many people find that access to information via today's technologies is awkward, stressful, and overly intrusive in their lives. The problem is not with the information itself, but rather ... expand

SESSION: **Understanding data**

A model of navigation for very large data views
Michael Glueck, Tovi Grossman, Daniel Wigdor
Pages: 9-16
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Existing user performance models of navigation for very large documents describe trends in movement time over the entire navigation task. However, these navigation tasks are in fact a combination of many sub-tasks, the details of which are lost when ... expand

FacetClouds: exploring tag clouds for multi-dimensional data
Manuela Waldner, Johann Schrammel, Michael Klein, Katrín Kristjánsdóttir, Dominik Unger, Manfred Tscheligi
Pages: 17-24
Full text: PDF

Tag clouds are simple yet very widespread representations of how often certain words appear in a collection. In conventional tag clouds, only a single visual text variable is actively controlled: the tags' font size. Previous work has demonstrated that ... expand

The effects of display fidelity, visual complexity, and task scope on spatial understanding of 3D graphs
Felipe Bacim, Eric Ragan, Siroberto Scerbo, Nicholas F. Polys, Mehdi Setareh, Brett D. Jones
Pages: 25-32
Full text: PDF

Immersive display features can improve performance for tasks involving 3D, but determining which types of spatial analysis tasks are affected by immersive display features for different applications is not simple. This research adds to the knowledge ... expand

Evaluating the readability of extended filter/flow graphs
Florian Haag, Steffen Lohmann, Thomas Ertl
Pages: 33-36
Full text: PDF

The filter/flow model is a graph-based query visualization capable of representing arbitrary Boolean expressions. However, the resulting graphs quickly become large and hard to handle when representing complex search queries. We developed an extended ... expand

SESSION: **Image-based rendering and tracking**

Non-linear normalized entropy based exposure blending
Neil D. B. Bruce
Pages: 37-44
Full text: PDF

In this paper we consider the problem of dynamic range compression from multiple exposures in the absence of raw images, radiometric response functions, or irradiance information. This is achieved in a rapid and relatively simplistic fashion by merging ... expand

Simulated bidirectional texture functions with silhouette details
Mohamed Yessine Yengui, Pierre Poulin
Pages: 45-54
Full text: PDF

The representation of material appearance requires an understanding of the underlying structures of real surfaces, light-material interaction, and human visual system. The Bidirectional Texture Function (BTF) describes real-world materials as a spatial ... expand

Efficient reconstruction, decomposition and editing for spatially-varying reflectance data
Yong Hu, Shan Wang, Yue Qi
Pages: 55-62
Full text: PDF

We present a new method for modeling real-world surface reflectance, described with non-parametric spatially-varying bidirectional reflectance distribution functions (SVBRDF). Our method seeks to achieve high reconstruction accuracy, compactness and ... expand

Dynamics based 3D skeletal hand tracking
Stan Melax, Leonid Keselman, Sterling Orsten
Pages: 63-70
Full text: PDF

Tracking the full skeletal pose of the hands and fingers is a challenging problem that has a plethora of applications for user interaction. Existing techniques either require wearable hardware, add restrictions to user pose, or require significant computation ... expand

SESSION: **Input 1: pens and consistency**

Motion and context sensing techniques for pen computing
Ken Hinckley, Xiang 'Anthony' Chen, Hrvoje Benko
Pages: 71-78
Full text: PDF

We explore techniques for a slender and untethered stylus prototype enhanced with a full suite of inertial sensors (three-axis accelerometer, gyroscope, and magnetometer). We present a taxonomy of enhanced stylus input techniques and consider a number ... expand

User perceptions of drawing logic diagrams with pen-centric user interfaces
Bo Kang, Jared N. Bott, Joseph J. LaViola, Jr.
Pages: 79-86
Full text: PDF

Researchers hypothesize pen-based interfaces are the input method of choice for structured 2D languages, as they are natural for users. In our research we asked whether naturalness, similarity to pen and paper, is more important than speed of entry and ... expand

Understanding the consistency of users' pen and finger stroke gesture articulation
Lisa Anthony, Radu-Daniel Vatavu, Jacob O. Wobbrock
Pages: 87-94
Full text: PDF

Little work has been done on understanding the articulation patterns of users' touch and surface gestures, despite the importance of such knowledge to inform the design of gesture recognizers and gesture sets for different applications. We report a methodology ... expand

Effects of hand drift while typing on touchscreens
Frank Chun Yat Li, Leah Findlater, Khai N. Truong
Pages: 95-98
Full text: PDF

On a touchscreen keyboard, it can be difficult to continuously type without frequently looking at the keys. One factor contributing to this difficulty is called hand drift, where a user's hands gradually misalign with the touchscreen keyboard ... expand

SESSION: **Modeling and animation**

ACM: atlas of connectivity maps for semiregular models
Ali Mahdavi Amiri, Faramarz Samavati
Pages: 99-107
Full text: PDF

Semiregular models are an important subset of models in computer graphics. They are typically obtained by applying repetitive regular refinements on an initial arbitrary model. As a result, their connectivity strongly resembles regularity due to these ... expand

Least-squares hermite radial basis functions implicits with adaptive sampling
Harlen Costa Batagelo, João Paulo Gois
Pages: 109-116
Full text: PDF

We investigate the use of Hermite Radial Basis Functions (HRBF) Implicits with least squares for the implicit surface reconstruction of scattered first-order Hermitian data. Instead of interpolating all pairs of point-normals, we select a small subset ... expand

Local fairing with local inverse
Javad Sadeghi, Faramarz Samavati
Pages: 117-124
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Local fairing techniques are extensively used in the geometry processing of curves and surfaces. They also play an important role in the multiresolution shape editing and synthesis applications. However, due to the inter-dependency of the vertices after ... expand

Target particle control of smoke simulation
Jamie Madill, David Mould
Pages: 125-132
Full text: PDF

User control over fluid simulations is a long-standing research problem in computer graphics. Applications in games and films often require recognizable creatures or objects formed from smoke, water, or flame. This paper describes a two-layer approach ... expand

SESSION: **Health, wellness, and snippets**

Is movement better?: comparing sedentary and motion-based game controls for older adults
Kathrin M. Gerling, Kristen K. Dergousoff, Regan L. Mandryk
Pages: 133-140
Full text: PDF

Providing cognitive and physical stimulation for older adults is critical for their well-being. Video games offer the opportunity of engaging seniors, and research has shown a variety of positive effects of motion-based video games for older adults. ... expand

Adaptive difficulty in exergames for Parkinson's disease patients
Jan Smeddinck, Sandra Siegel, Marc Herrlich
Pages: 141-148
Full text: PDF

Parkinson's disease (PD) patients can benefit from regular physical exercises which may ease their symptoms and can slow down the progression of the disease. Motion-based video games can provide motivation to carry out the often repetitive exercises, ... expand

Personal informatics in chronic illness management
Haley MacLeod, Anthony Tang, Sheelagh Carpendale
Pages: 149-156
Full text: PDF

Many people with chronic illness suffer from debilitating symptoms or episodes that inhibit normal day-to-day function. Pervasive tools offer the possibility to help manage these conditions, particularly by helping people understand their conditions. ... expand

Improving form-based data entry with image snippets
Nicola Dell, Nathan Breit, Jacob O. Wobbrock, Gaetano Borriello
Pages: 157-164
Full text: PDF

This paper describes Snippets, a novel method for improving computerized data entry from paper forms. Using computer vision techniques, Snippets segments an image of the form into small snippets that each contain the content for a single form ... expand

SESSION: **Rendering**

A micro 64-tree structure for accelerating ray tracing on a GPU
Xin Liu, Jon G. Rokne
Pages: 165-172
Full text: PDF

The uniform grid is a well-known acceleration structure for ray tracing. It is fast to build, but slow to traverse. In this paper, we propose a novel micro 64-tree structure to speed up grid traversals on a GPU. A micro 64-tree is a compact 64-way full ... expand

Partition of unity parametrics for texture synthesis
Jack Caron, David Mould
Pages: 173-179
Full text: PDF

Partition of unity parametrics (PUPs) are a recent framework designed for geometric modeling. We propose employing PUPs for procedural texture synthesis, taking advantage of the framework's guarantees of high continuity and local support. Using ... expand

Structure and aesthetics in non-photorealistic images
Hua Li, David Mould, Jim Davies
Pages: 181-188
Full text: PDF

Non-photorealistic rendering (NPR) has been used to produce stylized images, e.g., in a stippled or painted style. To evaluate NPR algorithms, similarity measurements used in image processing have been employed to assess the quality of rendered images. ... expand

Rendering in shift-invariant spaces
Usman R. Alim
Pages: 189-196
Full text: PDF

We present a novel image representation method based on shift-invariant spaces. Unlike existing rendering methods, our proposed approach consists of two steps: an analog acquisition step that traces rays through the scene, and a subsequent digital processing ... expand

SESSION: **Input 2: haptic and gestures**

Understanding touch selection accuracy on flat and hemispherical deformable surfaces
Felipe Bacim, Mike Sinclair, Hrvoje Benko
Pages: 197-204
Full text: PDF

Touch technology is rapidly evolving, and soon deformable, movable and malleable touch interfaces may be part of everyday computing. While there has been a lot of work on understanding touch interactions on flat surfaces, as well as recent work about ... expand

It's alive!: exploring the design space of a gesturing phone
Jessica Q. Dawson, Oliver S. Schneider, Joel Ferstay, Dereck Toker, Juliette Link, Shathel Haddad, Karon MacLean
Pages: 205-212
Full text: PDF

Recent technical developments with flexible display materials have diversified the possible forms of near-future handheld devices. We envision smartphones that will deploy these materials for physical, device-originated gestural display as expressive ... expand

Haptic target acquisition to enable spatial gestures in nonvisual displays
Alexander Fiannaca, Tony Morelli, Eelke Folmer
Pages: 213-219
Full text: PDF

Nonvisual natural user interfaces can facilitate gesture-based interaction without having to rely on a physical display. Consequently, this may significantly increase available interaction space on mobile devices, where screen real estate is limited. ... expand

Extending the vocabulary of touch events with ThumbRock
David Bonnet, Caroline Appert, Michel Beaudouin-Lafon
Pages: 221-228
Full text: PDF

Compared with mouse-based interaction on a desktop interface, touch-based interaction on a mobile device is quite limited: most applications only support tapping and dragging to perform simple gestures. Finger rolling provides an alternative to tapping ... expand

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