EuroVis
2017

19th EG/VGTC
Conference on Visualization

BARCELONA
12-16 June 2017

eurovis2017.virvig.es
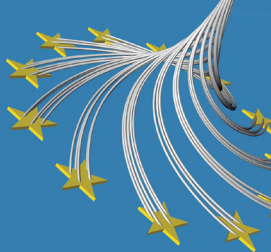
ViRVIG UPC IEEE vgtc EG Eurographics

Índice

Welcome to EuroVis 2017!

EuroVis 2017, the 19th Eurographics / IEEE VGTC Conference on Visualization, will take place in Barcelona, on June 12-16, 2017, hosted by the Visualization, Virtual Reality and Graphics Interaction Group (ViRVIG) of the Universitat Politècnica de Catalunya. EuroVis is the annual Visualization Conference organized by the Eurographics Working Group on Data Visualization and supported by the IEEE Visualization and Graphics Technical Committee (IEEE VGTC). It has been an Eurographics and IEEE co-supported international visualization event held in Europe annually since 1999.

On behalf of the Organizing Committee, we welcome all the attendees, and hope that you will enjoy this event that we have prepared with great enthusiasm and will also able to experience several of the many activities Barcelona has to offer.

Isabel Navazo & Pere-Pau Vázquez
EuroVis 2017 co-chairs
and
The ViRVIG Group of Universitat Politècnica de Catalunya

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Eurographics
Sección Española
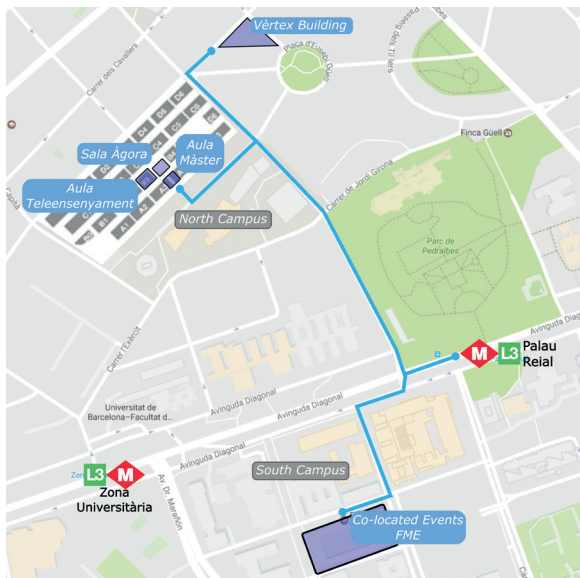
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Venue Overview

Co-located events (Monday evening and Tuesday morning) will be held in the UPC South Campus (Facultat de Matemàtiques i Estadística, FME) and the main conference in the UPC North Campus (from Tuesday afternoon). The distance between the campuses is about 10 minutes on foot.

Time	Monday	Tuesday	Wednesday		
8:00		Registration SC	Registration NC		
8:50		4 parallel sessions: EuroVA, EuroRV3, EnvirVis, EGPGV	FP1: Scalar field analysis	FP2: Evaluating visualization	ST1
10:30			Coffee break		
11:00		4 parallel sessions EuroVA, EuroRV3, EnvirVis, EGPGV	FP3: Biomedical visualization	FP4: Plots, plots, plots	ST2
12:40	Registration SC	Lunch SC	Lunch NC		
14:15	5 parallel sessions: EuroVA, EuroRV3, EnvirVis, EGPGV, ML Vis	Opening Keynote: M. Wattenberg & F. Viégas (Google, Inc.)	FP5: Text & time visualization	SP1: Multi-dimensional & Geospatial Visualization	ST3
15:55	Coffee SC		Coffee break NC		
16:30	5 parallel sessions: EuroVA, EuroRV3, EnvirVis, EGPGV, ML Vis	Fast Forward	FP6: Data Processing	IND1: Intel	ST4
18:10	Workshops reception	Welcome reception and Poster Session	18:30 - Visit to Sagrada Família		

Program Overview

Thursday			Friday		
Registration NC					
FP7: Graph Visualization	IND2: Industrial Panel	SP2: Visualization Models & Human Computer Interaction	FP13: Interaction & Presentation	SP5: Biomedical and Biological Visualization	SP6: Applications
Coffee break					
FP8: Applications & Design studies	FP9:Visual Encoding Analysis	SP3: Temporal, Flow, & Hierarchy Visualization	Capstone: H. Hauser, U. Bergen Prizes Closing		
Lunch NC					
FP10: Multi & High Dimensional Visualization	FP11: Geo & Space Visualization	SP4: Visual Design, Case Studies, & Evaluation			
Coffee break NC					
FP12: Uncertainty	IND3: Nvidia				
20:30 –Gala Dinner					

Legend
SC: South Campus (Co-located events)
NC: North Campus (Main Conference)

☐ FPN: Full Papers, Session N
☐ SPN: Short Papers, Session N
☐ STN: State of the Art Papers, Session N
☐ IND: Industrial talk/panel

Co-Located Events

Several co-located events are traditionally organized along with the EuroVis conference. This year there will be 4 conferences and workshops, and one tutorial. These events take place on Monday afternoon and Tuesday morning. The events are the following ones:

EGPGV

EGPGV'17 is the Eurographics Symposium on Parallel Graphics and Visualization. This year, it is its 17th edition. EGPGV aims to foster the exchange of experiences and knowledge exploiting and defining new trends in the area at the crossroads of big data mining, parallel computing, computer graphics, and data visualization.

EnvirVis

The EnvirVis workshop addresses the visualization needs for environmental research. Its goal is to raise awareness to the importance of visualisation in geosciences and to establish a forum for interdisciplinary discussions. Not only that research in environmental sciences has become more and more important as we are faced with increasing problems concerning climate change, water scarcity, pollution of the environment and changes in biodiversity. In addition, the amount of data obtained from complex monitoring, remote sensing, statistical analysis, and simulation of natural phenomena such as groundwater processes or migration of animal species under changing natural conditions is ever increasing.

EuroRV3

The fifth EuroRVVV (EuroVis Workshop on Reproducibility, Verification, and Validation in Visualization) workshop was co-organized by Kai Lawonn (University of Koblenz - Landau, Germany), Noeska Smit (University of Bergen, Norway), and Douglas Cunningham (BTU Cottbus-Senftenberg, Germany). The call for papers this year focused on the topic of 'Perception in Visualization'. Submitted papers underwent a one-stage peer-review process, and five papers were accepted for presentation. The full program featured a combination of paper presentations and invited talks.

EuroVA

EuroVA 2017 is the eighth international EuroGraphics workshop on Visual Analytics. Visual Analytics is a problem-solving and sense-making technology that integrates analytical computations, visual representations, and interaction. It includes the analysis of complex (massive, dynamic, ambiguous, conflicting, …) data and information for gaining understanding, building knowledge, and inferring insight. Visual Analytics aims at a synergistic collaboration of humans and computers mediated through interactive visual interfaces.

Machine Learning Methods in Visualisation for Big Data 2017

In Monday afternoon, Ian Nabney, Jaakko Peltonen and Daniel Archambault are organizing for second time the tutorial on Machine Learning Methods in Visualization. This year, the tutorial will focus on Visualization for Big Data.

Co-Located Events Venue
Campus Sud UPC - UPC South Campus
(Facultat de Matemàtiques i Estadística, FME)
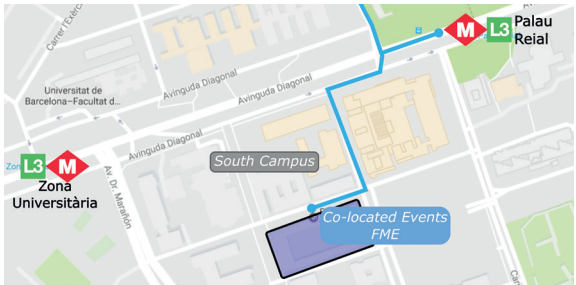
S01: Machine learning tutorial
S02: Eurographics Symposium on Parallel Graphics and Visualization
S04: EnvirVis
S05: EuroRV3
C: EuroVA

Carrer Llorens Artigas

Carrer Pau Gargallo

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Jardí / Jardin / Courtyard

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A

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Floor -1

Floor 0

D

S03

S02

S01

S04

S05

C

Sessions: Monday evening
Campus Sud – South Campus

EGPGV (Room S02)

14:15–14:40 Welcome

14:40–15:55 Session 1: Performance Modeling and Optimization
Chair: C. Garth

▶ **PaViz: A Power-Adaptive Framework for Optimizing Visualization Performance**
S. Labasan, M. Larsen, H. Childs, B. Rountree

▶ **Prediction of Distributed Volume Visualization Performance to Support Render Hardware Acquisition**
G. Tkachev, S. Frey, C. Müller, V. Bruder, T. Ertl

▶ **Progressive CPU Volume Rendering with Sample Accumulation**
W. Usher, J. Amstutz, C. Brownlee, A. Knoll, I. Wald

15.55-16.30 Coffee Break

16.30-17.45 Session 2: Exploratory Techniques **- Chair: F. Sadlo**

▶ **Photo-Guided Exploration of Volume Data Features**
M. Raji, A. Hota, R. Sisneros, P. Messmer, J. Huang

▶ **A Space-Efficient Method for Navigable Ensemble Analysis and Visualization**
A. Hota, M. Raji, T. Hobson, J. Huang

▶ **Interactive Exploration of Dissipation Element Geometry**
T. Vierjahn, A. Schnorr, B. Weyers, D. Denker, I. Wald, C. Garth, T. Kuhlen, B. Hentschel

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18.10 Welcome Reception

Sessions: Monday evening
Campus Sud – South Campus

14:15-14:20 Welcome

14:20-15:55 Session 1 - Chair: R. Bujack

▶ **Setting up Virtual Geographic Environments in Unity**
   K. Rink, L. Bilke, O. Kolditz
▶ **An Interactive Web-based Doppler Wind Lidar Visualisation System**
   N. Tan Jerome, S. Chilingaryan, A. Kopmann, A. Wieser
▶ **Visual Characterisation of Temporal Occupancy for Movement Ecology**
   A. Slingsby, E. van Loon

15:55-16:30 Coffee Break

16:30-18:10 Session 2 - Chair: K. Rink

▶ **Visual Study of the Benguela Upwelling System using Pathline Predicates**
   P. Nardini, M. Böttinger, G. Scheuermann, M. Schmidt
▶ **Visual Eddy Analysis of the Agulhas Current**
   F. Raith, Niklas Röber, H. Haak, G. Scheuermann
▶ **Multivariate Visualization of Oceanography Data Using Decals**
   A. Rocha, U. Alim, J. Daniel Silva, M. Costa Sousa
▶ **STOAViz: Visualizing Saturated Thickness of Ogallala Aquifer**
   T. Dang, L. Nguyen

18.10 Welcome Reception

Sessions: Monday evening
Campus Sud – South Campus

EuroRV3	(Room S05)

14:15–14:25 Welcome

14:25–15:55 Opening Keynote - Chair: N. Smit/K. Lawonn

▶ **Modifying Perceptual Experiments to Evaluate Visualization Techniques**
  D. Cunningham –BTU Cottbus-Senftenberg, Germany

15:55–16:30 Coffee Break

16:30–18:10 Session 1: Perceptual Experiments and Insights
Chair: S. Oeltze-Jafra

▶ **A Crowdsourced Approach to Colormap Assessment**
  T. Turton, C. Ware, F. Samsel, D. Rogers
▶ **Evaluating the Perceptual Uniformity of Color Sequences for Feature Discrimination**
  C. Ware, T. Turton, F. Samsel, R. Bujack, D. Rogers
▶ **Where'd it go? How geographic and force-directed layouts affect network task performance**
  S. Hale, G. McNeill, J. Bright
▶ **Invited talk: Searching where the light is and where it is not: Strategies for better studies**
  R. Kosara – Research Scientist at Tableau Software

18.10 Welcome Reception

Sessions: Monday evening
Campus Sud – South Campus

EuroVA   (Room C – Sala d'Actes)

14:15–15:55 Session1: Interaction
Chairs: M. Sedlmair, C. Tominski

▶ **Opening remarks**
▶ **Keynote "Natural Interaction for Enhancing Visual Analytics"**
   R. Dachselt
▶ **Guidance for Multi-Type Entity Graphs from Text Collections**
   M. Müller, K. Ballweg, T. von Landesberger, S. Yimam, U. Fahrer, C. Biemann, M. Rosenbach, M. Regneri

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15:55–16:30 Coffee break

16:30–18:10 Session 2: Sensemaking, Analytics, and Retrieval
Chair: J. Kohlhammer

▶ **How Sensemaking Tools Influence Display Space Usage**
   T. Geymayer, M. Waldner, A. Lex, D. Schmalstieg
▶ **Feature Alignment for the Analysis of Verbatim Text Transcripts**
   W. Jentner, M. El-Assady, B. Gipp, D. Keim
▶ **Combining Cluster and Outlier Analysis with Visual Analytics**
   J. Bernard, E. Dobermann, M. Sedlmair, D. Fellner
▶ **Visual Analytics for Information Retrieval Evaluation Campaigns**
   M. Angelini, N.Ferro, G. Santucci, G. Silvello

18.10   **Welcome Reception**

Sessions: Tuesday Morning
Campus Sud – South Campus

EGPGV **(Room S02)**

09.40-10.30 Session 3: Alternative Programming Model Techniques
Chair: J. Tierny
▶ **A Task-Based Parallel Rendering Component For Large-Scale Visualization Applications**
  T. Biedert, K. Werner, B. Hentschel, C. Garth
▶ **Achieving Portable Performance For Wavelet Compression Using Data Parallel Primitives**
  S. Li, N. Marsaglia, V. Chen, C. Sewell, J. Clyne, H. Childs

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10.30-11.00 Coffee Break

11.00-12.20 Session 4: Keynote
▶ **NVIDIA IndeX - A Scalable HPC Visualization SDK for Computational Mechanics and Data Analytics**
  T.M. Thamm, M. Nienhaus (NVIDIA ARC, Berlin, Germany)

12.00-12.40 Closing

Sessions: Tuesday Morning
Campus Sud – South Campus

**EnvirVis: Eurographics Workshop on
Visualization in Environmental Sciences   (Room S04)**

08:50-10:10 Session 3: Keynote - Chair: G. Scheuermann
▶ **Decoding the Mysteries of Color Perception**
   B. Rogowitz

10:30-11:00 Coffee Break

11:00 - 12:30 Session 4 - Chair: A. Middel
▶ **Extracting, Visualizing and Tracking Mesoscale Ocean Eddies
   in Two-dimensional Image Sequences Using Contours and
   Moments**
   D. Banesh, J. Schoonover, J. Ahrens, B. Hamann
▶ **Video Compression for Ocean Simulation Databases**
   A. S. Berres, T. Turton, M. Petersen, D. Rogers, J. Ahrens
▶ **Intuitive Colormaps for Environmental Visualization**
   F. Samsel, T. Turton, P. Wolfram, R. Bujack

12:30-12:40 Closing

Sessions: Tuesday Morning
Campus Sud – South Campus

EuroRV3 **(Room S05)**

08:50–10:30 Session 3: Evaluation Guidelines **- Chair: M. Krone**

▶ **Guidelines and Recommendations for the Evaluation of New Visualization Techniques with the Means of Experimental Studies**
M. Luz, K. Lawonn, C. Hansen

▶ **From a user study to a valid claim: how to test your hypothesis and avoid common pitfalls**
N. de Hoon, E. Eisemann, A. Vilanova

▶ **Invited talk: Reproducibility in Perception-Based Medical Visualization Studies**
B. Preim–Otto von Guericke University, Magdeburg, Germany

10:30–11:00 Coffee Break

11:00–12:30 Session 4: Closing Keynote **- Chair: A. Vilanova**

▶ **The computational modelling of visual attention: saliency model vs saccadic model**
O. Le Meur –University of Rennes, France

12:30 – 12:40 Closing

Sessions: Tuesday Morning
Campus Sud – South Campus

EuroVA (Room C – Sala d'Actes)

08:50–10:30 Applications - Chair: T. von Landesberger
- ▶ **PipeVis: Interactive Visual Exploration of Pipeline Incident Data**
  Z. Sahaf, M. Marbouti, R. Cabral Mota, H. Alemasoom, F. Maurer, M. Costa Sousa
- ▶ **Visual Analysis of Optical Coherence Tomography Data in Ophthalmology**
  M. Röhlig, P. Rosenthal, C. Schmidt, H. Schumann, O. Stachs
- ▶ **Subpopulation Discovery and Validation in Epidemiological Data**
  S. Alemzadeh, T. Hielscher, U. Niemann, L. Cibulski, T. Ittermann, H. Völzke, M. Spiliopoulou, B. Preim
- ▶ **Visual Comparative Case Analytics**
  D. Sacha, W. Jentner, L. Zhang, F. Stoffel, G. Ellis

10:30–11:00 Coffee Break

11:00–12:30 Session 4: Space and Time - Chair: W. Aigner
- ▶ **Visual Analytics for Multitemporal Aerial Image Georeferencing**
  A. Amor-Amorós, P. Federico, S. Miksch, S. Zambanini, S. Brenner, R. Sablatnig
- ▶ **Visual Analysis of Geo-spatial Data in 3D Terrain Environments using Focus+Context**
  C. Richter, S. Dübel, H. Schumann
- ▶ **A Visual Analytics Approach for User Behaviour Understanding through Action Sequence Analysis**
  P. Nguyen, C. Turkay, G. Andrienko, N. Andrienko, O. Thonnard
- ▶ **A Unified Process for Visual-Interactive Labeling**
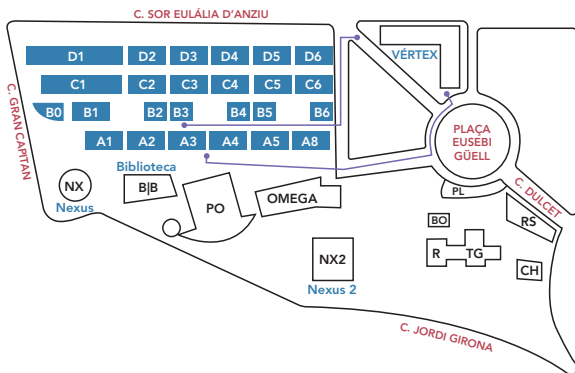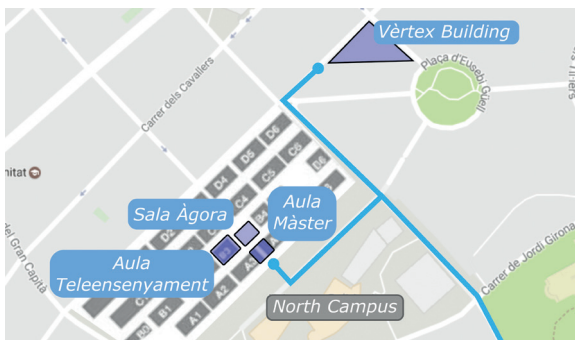 J. Bernard, M. Zellepzauer, W. Aigner, M. Sedlmair

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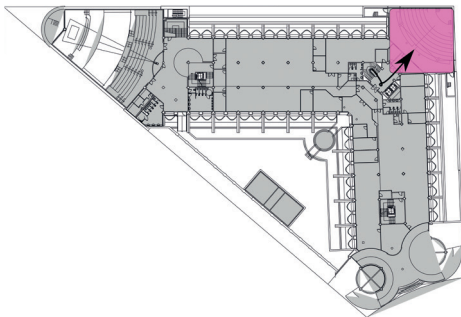**12:30 – 12:40** Closing remarks & Best paper

Main Conference Venue

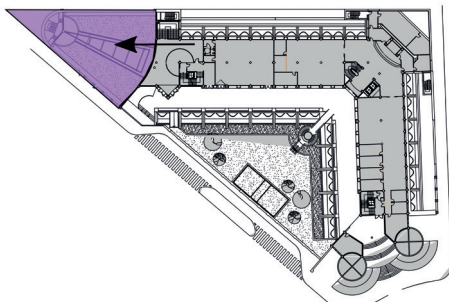## Campus Nord UPC - UPC North Campus

Main Conference Venue
Campus Nord UPC – UPC North Campus

Vertex Building: -1 Floor Sala d'actes

Vertex Building: Main Floor Auditori

Sessions: Tuesday Evening
Campus Nord – North Campus

14:15–14:45 EuroVis Opening Session
Auditori, Vèrtex building - VX
Welcome
Chairs: P.P. Vázquez & I. Navazo

14:45-15:55 Invited Talk
M. Wattenberg and F. Viégas, Google, Inc.

TITLE:
Visualization: The secret weapon for machine learning

ABSTRACT:
Machine learning is playing an increasingly influential role in the world, due to dramatic technical leaps in recent years. But these new developments bring their own questions. What is the best way to train models and to debug them? How can we understand what is going on under the hood of deep neural networks? It turns out that visualization can play a central role in answering these questions. We'll discuss recent work that shows how interactive exploration can help people use, interpret, and learn about machine intelligence. This talk will be an invitation, aimed at visualization experts, to the field of machine learning.

15:55–16:30 Coffee break
Garden of the Vèrtex building - VX

16:30 Fast Forward
Auditori Vèrtex - **Chairs: C. Andújar & O. Argudo**

18:10 Welcome reception and posters session

Sessions: Wednesday
Campus Nord – North Campus

08:15 Registration North Campus
Sala Polivalent, next to Aula Màster

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08:50–10:30 Technical sessions

▶ **Full Papers, FP1: Scalar Field Analysis**
   Room Aula Màster (A3 building) **- Chair: C. Hansen**
   H. Saikia, T. Weinkauf: Global Feature Tracking and Similarity Estimation in Time-Dependent Scalar Fields
   J. Lukasczyk, G. Weber, R. Maciejewski, C. Garth, H. Leitte: Nested Tracking Graphs
   G. Nucha, G.P. Bonneau, S. Hahmann, V. Natarajan: Computing contour tree for piecewise polynomial functions
   J. Horacsek, U. Alim: Compactly Supported Biorthgonal Wavelet Filters-banks on the Body Centered Cubic Lattice

▶ **Full Papers, FP2: Evaluating Visualization**
   Room Àgora (C3 building) **- Chair: J. Stasko**
   N. Kerracher, J. Kennedy: Constructing and Evaluating Visualisation Task Classifications
   V. Sher, K. Bemis, I. Liccardi, M. Chen: An Empirical Study on the Reliability of Perceiving Correlation Indices using Scatterplots
   N. Kijmongkolchai, A. Abdul-Rahman, M. Chen: Empirically Measuring Soft Knowledge in Visualization
   T. Blascheck, M. Schweizer, F. Beck, T. Ertl: Visual Comparison of Eye Movement Patterns

▶ **State of the Art Papers, ST1**
   Aula Teleensenyament (B3 building) **- Chair: M. Sedlmair**
   Y. Lu, R. García, B. Hansen, M. Gleicher, R. Maciejewski, The State-of-the-Art in Predictive Visual Analytics
   A. Endert, W. Ribarsky, C. Turkay, W. Wong, I. Nabney, I. Díaz Blanco, F. Rossi, The State of the Art in Integrating Machine Learning into Visual Analytics

Sessions: Wednesday
Campus Nord – North Campus

10:30–11:00 Coffee break
Sala Polivalent, next to Aula Màster

11:00–12:40 Technical sessions

▶ **Full Papers, FP3: Biomedical Visualization**
Room Aula Màster (A3 building) - **Chair: J. Roerdink**
M. Meuschke, S. Voss, O. Beuing, B. Preim, K. Lawonn: Glyph-based Comparative Stress Tensor Visualization in Cerebral Aneurysms
M.A. Cypko, J. Wojdziak, M. Stoehr, B. Kirchner, B. Preim, A. Dietz, Heinz U. Lemke, S. Oeltze-Jafra: Visual Verification of Cancer Staging for Therapy Decision Support
C. Zhang, M. Caan, T. Höllt, E. Eisemann, A. Vilanova: Overview + Detail Visualization for Ensembles of Diffusion Tensors
B. Summa, J. Tierny, V. Pascucci: Visualizing the Uncertainty of Graph-based 2D Segmentation with Min-path Stability

▶ **Full Papers, FP4: Plots, Plots, Plots**
Room Àgora (C3 building) - **Chair: C. Tominski**
J. Giesen, L. Kühne, P. Lucas: Sclow Plots: Visualizing Empty Space
L. Shao, A. Mahajan, T. Schreck, D. Lehmann: Interactive Regression Lens for Exploring Scatter Plots
T. Torsney-Weir, M. Sedlmair, T. Moeller: Sliceplorer: 1D slices for multi-dimensional continuous functions
D. Ren, B. Lee, T.Höllerer: Stardust: Accessible and Transparent GPU Support for Information Visualization Rendering

▶ **State of the Art Papers, ST2**
Aula Teleensenyament (B3 building) - **Chair: R. Maciejewski**
S.Chen, L. Lin, X. Yuan, Social Media Visual Analytics
K. Kucher, C. Paradis, A. Kerren, The State of the Art in Sentiment Visualization

Sessions: Wednesday
Campus Nord – North Campus

12:40–14:15 Lunch
Garden of the Vèrtex building

14:15–15:55 Technical sessions

▶ **Full Papers, FP5: Text & Time Visualization**
Room Aula Màster (A3 building) - Chair: W. Aigner

Florian Stoffel, Wolfgang Jentner, Michael Behrisch, Johannes Fuchs, Daniel A. Keim: Interactive Ambiguity Resolution of Named Entities in Fictional Literature

S. Chandrasegaran, S. Karthik Badam, L. Kisselburgh, K. Ramani, N. Elmqvist: Integrating Visual Analytics Support for Grounded Theory Practice in Qualitative Text Analysis

M. El-Assady, R. Sevastjanova, B. Gipp, D. Keim, C.Collins: NEREx: Named-Entity Relationship Exploration in Multi-Party Conversations.

M. Bögl, P. Filzmoser, T. Gschwandtner, T. Lammarsch, R. Leite, S. Miksch, A. Rind: Cycle Plot Revisited: Outlier Detection in Multivariate Time Series

▶ **Short Papers, SP1: Multidimensional and Geospatial Visualization**
Room Àgora (C3 building) - Chair: D. Lehmann

H.Y. Wu; S. Takahashi; S.H. Poon; M. Arikawa: Scale-Adaptive Placement of Hierarchical Map Labels

A. Watters: Marching pentatopes for continuous morphing of isosurfaces from four dimensional data in HTML5/WebGL

R. Martins; H. Kruiger; R. Minghim; A.C. Telea; A. Kerren: MVN-Reduce: Dimensionality Reduction for the Visual Analysis of Multivariate Networks

A. Godwin; J. Stasko: Nodes, Paths, and Edges: Using Mental Maps to Augment Crime Data Analysis in Urban Spaces

A. Godwin; Y. Wang; J. Stasko: TypoTweet Maps: Characterizing Urban Areas through Typographic Social Media Visualization

Sessions: Wednesday
Campus Nord – North Campus

▶ **State of the Art papers, ST3**
Aula Teleensenyament (B3 building) - **Chair: H.Hauser**
L. McNabb, B. Laramee, Survey of Surveys (SoS) - Mapping The Landscape of Survey Papers in Information Visualisation
A. Lhuillier, C. Hurter, A. Telea, State of the Art in Edge and Trail Bundling Techniques

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15:55–16:30 Coffee break
Sala Polivalent (Next to Aula Màster, A3 building)

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16:30-17:20 Technical sessions

▶ **Full Papers, FP 6: Data Processing**
Room Aula Màster (A3 building) - **Chair: M. Hadwiger**
T. von Landesberger, D.W. Fellner and R. A. Ruddle: Visualization System Requirements for Data Processing Pipeline Design and Optimization
C. M. Schikora, M. Plack, R. Bornemann, P. Haring Bolívar, A.Kolb: Visual Analysis of Confocal Raman Spectroscopy Data using Cascaded Transfer Function Design

▶ **Industrial Session 1**
Room Àgora (C3 building)
Presenter: I. Wald, Intel, Inc
Title: Software-defined Visualization and In-situ Visualization: Potential and Challenges

▶ **State of the Art papers, ST4**
Aula Teleensenyament (B3 building) - **Chair: V. Natarajan**
C. Heinzl, S. Stappen, STAR: Visual Computing in Materials Sciences

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18:30   Visit to Sagrada Família

Sessions: Thursday
Campus Nord – North Campus

08:15 Registration North Campus
Sala Polivalent, next to Aula Màster

08:50–10:30 Technical sessions

▶ **Full Papers, FP7: Graph Visualization**
Aula Àgora (C3 building) - Chair: D. Archambault
E. Kerzner, A. Lex, C. Lynn Sigulinsky, T. Urness, B. W. Jones, R. E. Marc, M. Meyer: Visualizing Connectivity Relationships in Large Graphs

M. Burch, M. Hlawatsch, D. Weiskopf: Visualizing A Sequence of Thousand Graphs (Or Even More)

J. Hofmann, M. Größler, M. Rubio-Sánchez, P.P. Pichler, D. Lehmann: Visual Exploration of Global Trade Networks with Time-Dependent and Weighted Hierarchical Edge Bundles on GPU

H. Kruiger, P. Rauber, R. Messias Martins, A. Kerren, S. Kobourov, A. Telea: Graph Layouts by t-SNE

▶ **Short Papers, SP2: Visualization Models & Human Computer Interaction**
Sala Actes FIB (B6 building) - Chair: M. Krone
R. Korsara: An Argument Structure for Data Stories
Y. Chen: Visualizing Large Time-series Data on Very Small Screens
T.L. Turton; A.S. Berres; D.H. Rogers; J. Ahrens: ETK: An Evaluation Toolkit for Visualization User Studies

B. Asokarajan; R. Etemadpour; J. Abbas; S. Huskey; C. Weaver: TexTile: A Pixel-Based Focus+Context Tool For Analyzing Variants Across Multiple Text Scales

A. Srinivasan; J. Stasko: Natural Language Interfaces for Data Analysis with Visualization: Considering What Has and Could Be Asked

▶ **Industrial Panel** – **Moderator: Prof. P. Brunet**
E. Biosca - Everis, S. Vidal - BBVA, F. Cucchietti - BSC

Sessions: Thursday
Campus Nord – North Campus

10:30–11:00 Coffee break
Sala Polivalent, next to Aula Màster

11:00–12:40 Technical sessions

▶ **Full Papers, FP8: Applications & Design Studies**
Aula Màster (A3 building) - **Chair: J.D. Fekete**

P. van der Corput, J.J. van Wijk: Comparing Personal Image Collections with PICTuReVis

D. Sacha, F. Al-Masoudi, M. Stein, T. Schreck, D. Keim, G. Andrienko, H. Janetzko: Dynamic Visual Abstraction of Soccer Movement

M. Wunderlich, K. Ballweg, G. Fuchs, T. von Landesberger: Visualization of Train Delay Uncertainty and its Impacts on Trip Planning: A Design Study

A. Aboulhassan, R. Sicat, D. Baum, O. Wodo, M. Hadwiger: Comparative Visual Analysis of Structure-Performance Relations in Complex Bulk-Heterojunction Morphologies

▶ **Full Papers, FP9: Visual Encoding Analysis**
Room Àgora (C3 building) - **Chair: M. Sedlmair**

E. Welch, S. Kobourov: Measuring Symmetry in Drawings of Graphs

J. Poco, J. Heer: Reverse-Engineering Visualizations: Recovering Visual Encodings from Chart Images

J. Hullman, R. Kosara, H. Lam: Finding a Clear Path: Structuring Strategies for Visualization Sequences

S. McKenna, N.H. Riche, B. Lee, J. Boy, M. Meyer: Narrative Flow: Factors Shaping Data Story Consumption Experiences

Sessions: Thursday
Campus Nord – North Campus

▶ **Short Papers, SP3: Temporal, Flow and Hierarchy Visualization**
Sala Actes FIB (B6 building) - **Chair: H. Hauser**
J. Patchett; B. Nouanesengsy, G. Gisler; J. Ahrens; H. Hagen: In Situ and Post Processing Workflows for Asteroid Ablation Studies
D. Rees; R. Laramee; D. Nguyen; L. Zhang; G. Chen; H. Yeh; E. Zhang: A Stream Ribbon Seeding Strategy
F. Niebling: Spatial Interaction for the Post-Processing of 3D CFD Datasets
S. Hahn; J. Döllner: Hybrid-Treemap Layouting
J. Sheidin; J. Lanir; P. Bak; T. Kuflik, Time-Ray Maps: Visualization of spatial and temporal evolution of news stories

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12:40–14:15 Lunch
Garden of the Vèrtex building

14:15–15:55 Technical sessions

▶ **Full Papers, FP10: Multi & High Dimensional Visualization**
Aula Màster (A3 building) - **Chair: D. Weiskopf**
M. Rubio-Sánchez, A. Sanchez, D. Lehmann: Adaptable Radial Axes Plots for Improved Multivariate Data Visualization
Y. Wang, J. Li, F. Nie, H. Theisel, D. Lehmann, M. Gong: Linear Discriminative Star Coordinates for Exploring Class and Cluster Separation of High Dimensional Data
J. Bae, T. Helldin, M. Riveiro: Understanding Indirect Causal Relationships, Root Causes, and Effects

Sessions: Thursday
Campus Nord – North Campus

▶ **Full Papers, FP11: Geo & Space Visualization**
Àgora (C3 building) - Chair: M. Böttinger
M. van Garderen, B. Pampel, A. Nocaj, U. Brandes: Minimum-Displacement Overlap Removal for Geo-referenced Data Visualization
G. McNeill, S. Hale: Generating Tile Maps
L. Liu, D. Silver, K. Bemis, D. Kang, E. Curchitser: Illustrative Visualization of Mesoscale Ocean Eddies
E. Axelsson, J. Campi Costa, C. Silva, C. Emmart, A. Bock, A. Ynnerman: Dynamic Scene Graph: Enabling Scaling, Positioning, and Navigation in the Universe

▶ **Short Papers, SP4: Visual Design, Case Studies and Evaluation**
Sala Actes FIB (B6 building) - Chair: M. Waldner
D. Skau; R. Kosara: Readability and Precision in Pictorial Bar Charts
Z. Vosough; R. Groh; H.J. Schulz: On Establishing Visualization Requirements: A Case Study in Product Costing
D. Lange; F. Samsel; I. Karamouzas; R. Dockter II; T. Kowalewski; D. Keefe: Trajectory Mapper: Interactive Widgets and Artist-Designed Encodings for Visualizing Multivariate Trajectory Data
C. Roux; J. McAuley: Reflections on an experiment, evaluating the impact of spatialisation on exploration
I. Bacher; B. Mac Namee; J. Kelleher: Scoped: Visualising the scope chain within source code

15:55–16:30 Coffee break
Sala Polivalent, next to Aula Màster

Sessions: Thursday
Campus Nord – North Campus

16:30-17:20 Technical sessions

▶ **Full Papers, FP 12: Uncertainty**
   Aula Màster (A3 building) - Chair: Lars Linsen
   M. Hummel, L. Jöckel, J. Schäfer, M. Werner Hlawitschka,
   C.Garth: Visualizing Probabilistic Multi-Phase Fluid Simulation
   Data using a Sampling Approach
   Y. Wan, C. Hansen: Uncertainty Footprint

▶ **Industrial Session 3**
   Room Àgora (C3 building)
   P. Messmer, NVidia

21:00 Conference Dinner

Sessions: Friday Morning
Campus Nord – North Campus

08:15-08:50 Registration
Vèrtex building

08:50-10:30 Technical sessions

▶ **Full Papers, FP13: INTERACTION & PRESENTATION**
Auditori (Vèrtex Building) - **Chair: R. Laramee**
S. Karthik Badam, N. Elmqvist, J.D. Fekete: Steering the Craft: UI Elements and Visualizations for Supporting Progressive Visual Analytics
U. Kister, K. Klamka, C. Tominski, R. Dachselt: GraSp: Combining Spatially-aware Mobile Devices and a Display Wall for Graph Visualization and Interaction
H. Kong, Z. Liu, K. Karahalios: Internal and External Visual Cue Preferences for Visualizations in Presentations
Z. Liu, B. Kerr, M. Dontcheva, J. Grover, M. Hoffman, A. Wilson: CoreFlow: Extracting and Visualizing Branching Patterns from Event Sequences Using a Rank-Divide-Trim Approach

▶ **SP5: Biomedical and Biological Visualization**
Sala Actes (Vèrtex Building) - **Chair A. Vilanova**
Q. Li; K. Huang; R. Machiraju: Spatiotemporal Visualization of Gene Expression in the Developing Mouse Brain
C. Hanel; A. Demiralp; M. Axer; D. Gräßel; B. Hentschel; T.W. Kuhlen: Interactive Level-of-Detail Visualization of 3D Polarized Light Imaging Data Using Spherical Harmonics
N. Alharbi; M. Alharbi; X. Martinez; M. Krone; A.S. Rose; M. Baaden; R.S. Laramee; M. Chavent: Molecular Visualization of Computational Biology Data: A Survey of Surveys
C. Sirk; D. Schmalstieg; D. Kalkofen; A. Bornik: Dynamic Label Placement for Forensic Volume Visualization
C. Gillmann; P. Arbelaez; T. Wischgoll; J.T. Hernandez; H. Hagen: Intuitive Error Space Exploration of Medical Image Data in Clinical Daily Routine

Sessions: Friday Morning
Campus Nord – North Campus

▶ **SP6: Applications**

Room S217, Vèrtex Building - Chair: R. Kosara

S. Rukh Humayoun, S. Ardalan; R. AlTarawneh; A. Ebert: TExVis: An Interactive Visual Tool to Explore Twitter Data

T. Ruppert; A. Bannach; J. Bernard; M. Lokanc; J. Kohlhammer: Visual Access to Performance Indicators in the Mining Sector

N. Hube; M. Müller; R. Groh: Additional On-Demand Dimension for Data Visualization

A. Rind; A. Haberson; K. Blumenstein; C. Niederer; M. Wagner; W. Aigner: PubViz: Lightweight Visual Presentation of Publication Data

B. Karer; D. Fernández-Prieto; H. Hagen: The Situation Universe - Visualizing the Semantics of Integrated Data Structures

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10:30–11:00 Coffee break
Garden of Vèrtex Building

Sessions: Friday Morning
Campus Nord – North Campus

11:00–12:40 Capstone
Auditori, Vèrtex building
H. Hauser, U. Bergen

TITLE:

From One to Many in Visualization

ABSTRACT:

A lot of interesting development has been happening in visualization research in the past 25 years. Certain topics, like medical visualization, flow visualization, tabular data visualization, and network visualization have attracted continued interest over many years and every year fascinating new findings are presented. We focus on the important work of optimizing our solutions and maturing the field. Every now and then, however, we also see promising chances for radical innovation, for new pioneering research in visualization. In this talk, we take a look at one of these chances, i.e., to transition from the visualization of individual datasets to visually studying large sets of datasets, for example from medical cohort studies or from numerical ensemble simulations. It seems that relevant new visualization challenges arise, when hundreds or thousands of datasets are studied simultaneously—in particular, when these are sets of multi-aspect spatiotemporal datasets. This talk brings up some of the related major questions (for example: how to map to the 2D/3D visualization space), together with examples of related work, and hopefully inspires some bright minds to conduct more visualization research on this topic of increasing relevance.

12:15 Closing remarks, awards
Chairs - P.P. Vázquez & I. Navazo

Posters

▶ Structuring and visualizing knowledge in soil science
B. Stößel, E. Rabot, U. Weller, H.J. Vogel, F. Richter

▶ Towards an Adaptive Framework for Real-Time Visualization of Streaming Big Data
A. M. Khan, D. Gonçalves, D. Cunha Leão

▶ Diggersdiaries: Using text analysis to support exploration and reading in a large document collection
J. Nualart Vilaplana

▶ Memory Efficient Parallel Ray-casting Algorithm for Unstructured Grid Volume Rendering
D. Kim

▶ Evaluating Cognitive Load: Force-directed Layout vs. Chord Layout
R. Moses, S. Rukh Humayoun, R. AlTarawneh, A. Ebert

▶ Visualisation of the Forever 27 Club
S. Naik

▶ BitConduite: Visualizing and Analyzing Activity on the Bitcoin Network
C. Kinkeldey, J.D. Fekete, P. Isenberg

▶ Visualization Taxonomy based on the Specification of User's Goal and Data Dimensions
P. Kaur, B. Koenig-Ries

▶ Hypenet: Visualizing Dynamic Hypergraphs
P. Valdivia, P. Buono, J.D. Fekete

▶ An Interactive Visual Representation to Explore Association with Hierarchical Social Circles
S. Rukh Humayoun, S. Hammad Ali, R. AlTarawneh, A. Ebert

▶ Integrating Guided Clustering in Visual Analytics to Support Domain Expert Reasoning Processes
A. Mathisen, M. Nielsen, K. Grønbæk

Posters

▶ DcPAIRS : A Pairs Plot Based Decision Support System
  E. Dimara, P. Valdivia, C. Kinkeldey

▶ Power Efficiency of Volume Raycasting on Mobile Devices
  M. Heinemann, V. Bruder, S.Frey, T. Ertl

▶ Interactive Lens for Effective Time-Series Animation
  Y. Chen, J. Yang, Y. Zhao

▶ A visual approach for text analysis using multiword topics
  S. Mun, G. Desagulier, K. Lee

▶ Daag: Visual Analytics Clustering using network representation
  D. Alcaide Villar, J. Aerts

▶ Interactive Visualization of Massive Location Data using Multi-Scale Trajectories
  T. De Bodt, B. Adams, J. Aerts

▶ Uncertainty Visualization of Stenotic Regions in Vascular Structures
  G. Ristovski, H.K. Hahn, L. Linsen

▶ Using graphs for exposing the underlying competence design of academic degrees
  L. Blasco-Soplon, J. Minguillón

▶ ``Them again?'' Dynamic communities in the media
  H. Ren, M.L. Viaud, G. Melancon

▶ Visual Stratification for Epidemiological Analysis
  J.Matute, L. Linsen

▶ MDS-based Visual Survey of Biological Data Visualization Techniques
  A. Kerren, K. Kucher, Y.F. Li, F. Schreiber

▶ Visually Analyzing Parameter Influence on Optical Coherence Tomography Data in Ophthalmology
  M. Röhlig, M. Luboschik, R. Kala Prakasam, O. Stachs, H.

Posters

Schumann

▶ ConTraffic Visual Analytics in Support to Customs Risk-Analysis
M. Poulymenopoulou, A. Tsois

▶ Visual Analysis of Magnetic Resonance Spectroscopy Imaging Data for the Study of Human Brain Tumors
M. Jawad, L. Linsen

▶ Visual Analytics of Global Parameters in Simulation Ensembles of ODE-based Excitable Network Dynamics
Q. Ngo, M.T. Huett, L. Linsen

▶ Quantitative Comparison of Treemap Techniques for Time-Dependent Hierarchies
E. Faccin Vernier, J. Comba, A. Telea

▶ Projection Navigation In Extremely Large Datasets
H. Kruiger, A. Telea, C. Hurter

▶ Responsive Data Visualisation
K. Andrews, A. Smrdel

▶ Visualization of Temporal Logic Specifications
J. Scott-Brown, A. Papachristodoulou

▶ Semi-automatic Colonic Content Analysis for Diagnostic
V. Ceballos, E. Monclús, P.P. Vázquez, Á. Bendezú, M. Mego, X. Merino, F. Azpiroz, I. Navazo

▶ Visual Analysis of Geo-located Echo Chambers in Social Media
M. Hundt, B. Schneider, M. El-Assady, D. Keim, A. Diehl

▶ Tangible Visual Analysis: Brushing in a Mixed-Reality Environment
D. Gracanin, R. Tasooji, M. Handosa, K. Matkovic, M. Waldner

▶ A High-Dimensional Data Quality Metric using Pareto Optimality
T. Post, T. Wischgoll, B. Hamann, H. Hagen

▶ Visualising Data with L2
G. McNeill

Notes

EuroVis'17

BARCELONA 12-16 June

19th EG/VGTC Conference
on Visualization