iV2015 – 19th International Conference
Information Visualisation
21, 22, 23 and 24 July 2015
The University of Barcelona • Barcelona • Spain •
http://www.graphicslink.co.uk/IV2015/
http://www.ub.edu/web/ub/en/

CGiV2015 – 12th International Conference
Computer Graphics, Imaging and Visualization
21, 22, 23 and 24 July 2015
The University of Barcelona • Barcelona • Spain •
http://www.graphicslink.co.uk/IV2015/
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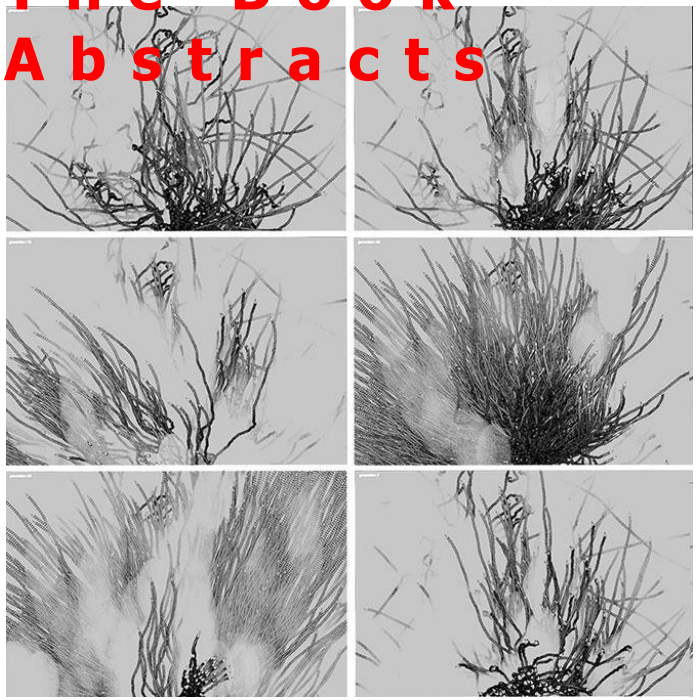
The Book Abstracts



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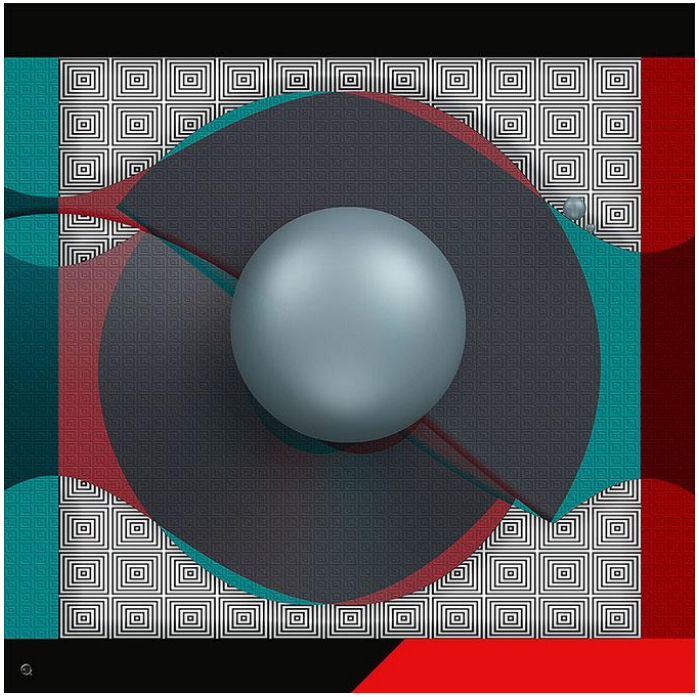

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D-Art

Universitat de Barcelona

Institute for Media and Communications Management
University of St.Gallen

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London South Bank University | Big Data & Informatics Research Group

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iV2015 & cgiv2015 - **DIGITAL ART GALLERY** Online Exhibition

July 2015- June 2016

VIRTUAL GALLERY VENUE

www.graphicslink.co.uk/DART.htm

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Exhibiting Artists:

LiQin Tan
Anna Chupa
Joohyun Pyune
Santiago Echeverry
Harvey Goldman
Daniela Sirbu
John Corbett
Gabriele Peters
Nancy Wood
Heather Freeman
Bogdan Soban
Galt Tomasino
Gina Gibson
Margie Labadie
Dena Elisabeth Eber
Mohammad Majid al-Rifaie

Corinne Whitaker
Gloria DeFilipps Brush
Chris Kitchener
Matjuska Teja Krasek
Olivia Koval
Mike Kingan
Jean Constant
John Antoine Labadie
Alan Singer
Anna Ursyn
Neil Howe
Andras Szalai
Chiara Passa
Richard Merritt

© "Guadalupe River Green Dark" - Nancy Wood

8th Doctoral Research Workshop
Information Visualisation

Organised by

Information Visualisation Conference

In cooperation with

London South Bank University | Big Data & Informatics Research Group

&

Institute for Media and Communications Management

University of St.Gallen

The Information Visualisation Conference (iV) is an international conference that aims to provide a foundation for integrating the human-centred, technological and strategic aspects of information visualisation in order to promote international exchange, cooperation and development. Building upon the reported success of last year's workshop, IVS is pleased to announce the "**8th Doctoral Research Workshop**" which will run as part of the 19th International Conference on Information Visualisation (iV2015).

Doctoral Research workshop

This workshop focuses on the issues that doctoral students face during their studies and includes following interactive sessions – the theme for this year Visual Thinking for (PhD) researcher "How to think more clearly, have more engaging conversations, and create richer research

- what visual thinking is and why it is relevant for researchers
- the benefits and risks of visual thinking

CGiV15

- what to visualize (visual templates, basic shapes, symbols)
- how to visualize (abstract vs. pictorial/metaphorical)
- to sketch visual templates (diagrams, metaphors, knowledge maps), basic shapes, symbols
- to apply visual thinking for their own research projects (e.g. the story of your PhD)

Approach:

- value the (visual) process (concept of rapid prototyping from Design Thinking)
- value failure/mistakes as healthy part of that process
- think visually (automatically) when approaching future problems and challenges

The workshop will be hands-on with short inputs from the instructor and time to work on the exercises and own projects visually where the instructor and peers will operate as sparring partner in a friendly environment.

Tuesday 21 July 2015

10:00	< The University of Barcelona ● **Facultat de Dret, Avenida Diagonal, 684, 08034, Barcelona** >
	Registration
10:30 - 13:0	< The University of Barcelona ● Facultat de Dret ● **Aula 1**>
	Doctoral Research Workshop
	Chairs: Banissi, Prof. Ebad, London South Bank University, UK
	Facilitator: Sebastian Kernbach, Institute of Media and Communications Management at the University of St. Gallen
	09:30 Registration
	10.00 Opening & Welcome from discussion Panel members
	10:45 what visual thinking is and why it is relevant for researchers / the benefits and risks of visual thinking
	11:00 Group Discussion
	12:30 what to visualize (visual templates, basic shapes, symbols) / how to visualize (abstract vs. pictorial/metaphorical)
13:00	< The University of Barcelona ● Facultat de Dret >
	Lunch Break
14:00 - 17:00	< The University of Barcelona ● Facultat de Dret ● **Aula 1**>
	Doctoral Research Workshop
	14.00 to sketch visual templates (diagrams, metaphors, knowledge maps), basic shapes, symbols
	14:15 Group Discussion
	15:10 to apply visual thinking for their own research projects (e.g. the story of your PhD)
	15:30 **Break**
	16:00 value the (visual) process (concept of rapid prototyping from Design Thinking) / value failure/mistakes as healthy part of that process / think visually (automatically) when approaching future problems and challenges
	16:45 Group Discussion
	17:00 **Close**

Wednesday 22 July 2015

09:00	< The University of Barcelona • **Facultat de Dret, Avenida Diagonal, 684, 08034, Barcelona** > **Registration**
10:15	< The University of Barcelona • Facultat de Dret • **Aula Magna** > **Opening & Welcome** **Subject Liaison Committee chairs:** Prof. Ramon Torrent, The University of Barcelona, Spain Prof. Ebad Banissi, London South Bank University, UK Prof Randolph Goebel, University of Alberta, Canada
10:30	< The University of Barcelona • Facultat de Dret • **Aula Magna** > **Session iV2015_1.1:** Information Visualisation Chair: Prof. Mark Apperley, University of Waikato, New Zealand <keynote Lecture> **And the user said: "Don't leave me alone!"** **Gilles Venturini** University Francois Rabelais of Tours, France
11:35	< The University of Barcelona • Facultat de Dret > *Break*

12:00 - 13:00	< The University of Barcelona • Facultat de Dret • **Aula Magna** > **Session iV2015_1.2: Visual Analytics** Chair: Prof. André, Elisabeth, Universität Augsburg, Germany **Visual Analysis of Car Fleet Trajectories to Find Representative Routes for Automotive Research** **David Spretke[1], Manuel Stein[1], Lyubka Sharalieva[1], Alexander Warta[2], Valentin Licht[2], Tobias Schreck[1], Daniel A. Keim[1]** [1]University of Konstanz, Germany; [2]Robert Bosch GmbH, Germany **Visualization Support for Comparing Energy Consumption Data** **Masood Masoodian[1], Birgit Endrass[2], René Bühling[2], Elisabeth André[2]** [1]The University of Waikato, New Zealand; [2]Augsburg University, Germany **Recent Advances in Multimedia Forgery and Security** **PUN, Chi Man** University of Macau, Macau S.A.R., China
13:00	< The University of Barcelona • Facultat de Dret > *Lunch Break*

14:15 - 15:30 cgiv	< The University of Barcelona • Facultat de Dret • **Aula 5**>	< The University of Barcelona • Facultat de Dret • **Aula 6** >
	Session iV2015_1.3: Information Visualisation - Theory & Techniques Chair: Prof. Juergen Doellner, Hasso-Plattner-Institut, German	**Session iV2015_1.4: A pplications of Graph Theory** Chair: Prof. Richard Laing, Scott Sutherland School, RGU, UK
	Directional Texture for Visualization **Manil Maskey, Timothy Newman** University of Alabama in Huntsville, United States of America	**Fast Graph Drawing Algorithm Revealing Networks Cores** **Romain Giot, Romain Bourqui** Univ. Bordeaux / LaBRI, France
	Designing and Annotating Metro Maps with Circular Routes **Hsiang-Yun Wu[1], Sheung-Hung Poon[2], Shigeo Takahashi[1], Masatoshi Arikawa[1], Chun-Cheng Lin[3], Hsu-Chun Yen[4]** [1]The University of Tokyo, Japan; [2]National Tsing Hua University, Taiwan; [3]National Chiao Tung University, Taiwan; [4]National Taiwan University	**Mental map models for edges** **Jana Katreniaková, Martin Ďuriš** Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovak Republic
	A Visualization Tool for Building Energy Management System **Takayuki Itoh[1], Masato Kawano[2], Shuji Kutsuna[2], Takeshi Watanabe[2]** [1]Ochanomizu University, Japan; [2]NTT Facilities VISUS, Germany	**Distributed Graph Layout with Spark** **Antoine Hinge, David Auber** LaBRI / Université de Bordeaux, France
	Layer-Centered Approach for Multigraphs Visualization **Denis Redondo[1,2], Arnaud Sallaberry[1,3], Dino Ienco[4], Faraz Zaidi[5,6], Pascal Poncelet[1,2]** [1]LIRMM; [2]Université de Montpellier; [3]Université Paul Valéry Montpellier; [4]IRSTEA Montpellier, UMR TETIS; [5]City University of New York; [6]Karachi Institute of Economics and Technology	

14:15 - 15:20	< The University of Barcelona • Facultat de Dret • **Aula 7**> **Session iV2015_1.5: Information Visualisation - Usability & Evaluation** Chair: Prof. Ebad banissi, London South bank University, UK **Simplified Stress and Simplified Silhouette Coefficient to a Faster Quality Evaluation of Multidimensional Projection Techniques and Feature Spaces** **Danilo Medeiros Eler, Jaqueline Batista Martins Teixeira, Priscila Alves Macanhã, Rogério Eduardo Garcia** UNESP, Univ Estadual Paulista, Brazil **Towards the Understanding of Interaction in Information Visualization** **Ana Raquel Figueiras** FCSH - Universidade Nova de Lisboa, Portugal **Plot Balalaika: Simple Chart Designs for Long-Tail Distributed Data** **Mark Shovman[1,2]** [1]Eyeway Vision, Israel; [2]Yahoo Labs Haifa **Heuristic Evaluation of a t-Commerce Prototype** **Nikolas Jorge Santiago Carneiro[1], Carlos Gustavo Resque Santos[1], Tiago Davi Oliveira de Araujo[1], Brunelli Pinto Miranda[1], Bianchi Serique Meiguins[1], Anderson Gregorio Marques Soares[2]** [1]Universidade Federal do Pará, Brazil; [2]Universidade Federal Rural da Amazônia
15:20	< The University of Barcelona • Facultat de Dret > *Break*

	< The University of Barcelona • Facultat de Dret • **Aula 5**>	< The University of Barcelona • Facultat de Dret • **Aula 6** >
15:50 - 17:00 cgiv	**Session iV2015_1.6: Information Visualisation Theory & Practice** Chair: Prof. Feng Lin, Nanyang Technological University, Singapore **Visual Analysis of Source Code Similarities** **Michael Burch, Julian Strotzer, Daniel Weiskopf** VISUS, University of Stuttgart, Germany **Indexed dataflow network: A multi-layer and programmable architecture to integrate both visualization pipelines and scene graphs** **Romain Guillemot, Stéphanie Prevost, Laurent Lucas** Université de Reims Champagne-Ardenne (URCA) - CReSTIC EA3804, France **Visualizing the Evolution of Module Workflows** **Marcel Hlawatsch[1], Michael Burch[1], Fabian Beck[1], Juliana Freire[2], Claudio Silva[2], Daniel Weiskopf[1]** [1]VISUS, University of Stuttgart, Germany; [2]Polytechnic School of Engineering, New York University	**Session CGiV2015_1.7: Geometric Modeling & Imaging** Chair: Prof. Chi Man PUN, University of Macau, Macau (S.A.R China) **An Immersive and Interactive Visualization System by Integrating Distinct Platforms** **Mário Popolin Neto[1,2], Alessandro Moraes[2], Danilo Medeiros Eler[3], José Remo Ferreira Brega[2]** [1]IFSP - Registro, Brazil; [2]UNESP - Bauru, Brazil; [3]UNESP - Presidente Prudente, Brazil **Image-based Hair Pre-Processing for Art Creation: A Case Study of Bas-Relief Modelling** Wenshu Zhang, Meili Wang, Jian Chang, Ruofeng Tong, Jian J Zhang Bournemouth University, UK **N-polar Visualization: Visual Analytics for Exploring Data Objects with Multiple Interactive Anchors** Taeil Jeon, Jihyun Lee, Wonjong Rhee, Bongwon Suh Seoul National University, South Korea **Shape Preserving Positive Rational Trigonometric Spline Surfaces** Muhammad Sarfraz, Farsia Hussain, Malik Zawwar Hussain Kuwait University, KW **Interpolation of Discrete time Signals using Cubic Spline Function** **Malik Zawwar Hussain[1], Misbah Irshad[2], Muhammad Sarfraz[3], Nousheen Zafar[1]** [1]University of the Punjab, Pakistan; [2]Lahore College for Women University, Pakistan; [3]Kuwait University, Kuwait

15:50 - 17:00

< The University of Barcelona • Facultat de Dret • **Aula 7**>

Session iV2015_1.8: Information Visualisation – Applications

Chair: Prof. Shunsuke Kamijo, The Univeresity of Tokyo, Japan

A Concurrent Architecture proposal for Information Visualization Pipeline

Nikolas Jorge Santiago Carneiro, Carlos Gustavo Resque Santos, Tiago Davi Oliveira de Araujo, Brunelli Pinto Miranda, Bianchi Serique Meiguins
Universidade Federal do Pará, Brazil

Self-Organizing Map-Based Feature Visualization and Selection for Defect Depth Estimation in Oil and Gas Pipelines

Abduljalil Abdulrahman Mohamed[1], Mohamed Hamdi[1], Sofiene Tahar[2]
[1]Ahmed Bin Mohamed Military College (ABMMC), Qatar; [2]Concordia University/Electrical and Computer Engineering Department, Montreal, Canada

The Recommendation Dashboard: A System to Visualise and Organise Recommendations

Gerwald Tschinkel[1], Cecilia di Sciascio[1], Belgin Mutlu[1], Vedran Sabol[1,2]
[1]Know Center Gmbh, Austria; [2]Graz University of Technology

17:00 – 17:30

< The University of Barcelona • Facultat de Dret • **Aula Magna** >

Session iV2015_1.9: Animation, Special Effects and Multimedia Show

Chair: Prof. Mark Bannatyne, IUPUI, USA

Thursday 23 July 2015

09:00 — < The University of Barcelona • **Facultat de Dret, Avenida Diagonal, 684, 08034, Barcelona** >

Registration

09:30 - 11:15 C

< The University of Barcelona • Facultat de Dret • **Aula 1**>

Session iV2015_2.1: Information Visualisation – Theory & Techniques

Chair: Gilles Venturini, University Francois Rabelais of Tours, France

A Color-based Visualization Approach to understand harmonic structures of Musical Compositions
Delfina Malandrino, Donato Pirozzi, Gianluca Zaccagnino, Rocco Zaccagnino
University of Salerno, Italy

Edge Visual Encodings in Matrix-Based Diagrams
Joris Sansen[1], Romain Bourqui[1], Bruno Pinaud[1], Helen Purchase[2]
[1]University of Bordeaux, France; [2]University of Glasgow, UK

Visualizing a set of multiple time series with an aggregate stacked graph
Nicolas Greffard, Pascale Kuntz
LINA-DUKe, University of Nantes, France

FATuM - Fast Animated Transitions using Multi-Buffers
Alexandre Perrot, David Auber
Universite de Bordeaux, France

Natural User Interface Design in DA-TU: An Interactive Clustered Data Visualization System
Shizhe He[1], Mao Lin Huang[1,2], Lin Zhu[2]
[1]University of Technology, Sydeny, Australia; [2]Tianjin University, China

< The University of Barcelona • Facultat de Dret • **Aula 5**>

Session iV2015_2.2: Knowledge Visualization and Visual Thinking

Chair: Sebastian Kernbach, University of St. Gallen, Switzerland

Value Lab Asia: A Space for Physical and Virtual Interdisciplinary Research and Collaboration
Afian Anwar[1], Bernhard Klein[2], Matthias Berger[2], Stefan Muller Arisona[2]
Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, United States of America; [2]Future Cities Laboratory, Department of Architecture, ETH Zurich, Switzerland

A Gesture Control Framework targeting High-resolution Video Wall Displays
Bernhard Klein
Future Cities Laboratory, Singapore-ETH Centre, 1 Create Way, Singapore 138602

Dynamic Multi-View, Multi-Format, Multi-User Visualizations: For Future Cities
Bernhard Klein[1], Remo Burkhard[1], Christine Meixner[2], Lukas Treyer[2]
[1]Future Cities Laboratory, Singapore-ETH Centre, 1 Create Way, Singapore 138602; [2]ETH Zurich, Chair of Information Architecture, 8093 Zurich, Wolfgang-Pauli-Str 27, Switzerland

The Design Process: A Visual Model
Sabrina Bresciani
University of St. Gallen, Switzerland

	< The University of Barcelona ● Facultat de Dret ● **Aula 6** >	< The University of Barcelona ● Facultat de Dret ● **Aula 7**>
	Session Mediviz2015_2.3: BioMedical Visualization Chair: Prof. Urska Cvek, Louisiana State University Shreveport, USA **Semi-automatic compartment extraction to assess 3D bone mineral density and morphometric parameters of the subchondral bone in the tibial knee** **Rabaa Youssef[1], Hamid Bouhadoun[2], Jean Denis Laredo[3], Christine Chappard[2]** [1]CEA-LIST CEA-LinkLab, Tunisia; [2]Laboratoire de Bioingénierie et Bioimagerie Ostéo-articulaire (B2OA), UMR CNRS 7052, Université Paris Diderot, PRES Sorbonne Paris Cité, Paris, France; [3]Service de Radiologie Ostéo-Articulaire, Hôpital Lariboisière, Paris, France **Web-based Information Retrieval and Visualization for Diagnostic Radiology** **Ben Chua[1], Xiuling Liu[2], Bin Dong[2], Feng Lin[1,2]** [1]Nanyang Technological University, Singapore; [2]Heibei University, China **Augmented representations of clustered fiber bundles for interactive queries** **Stefan Philips, Mario Hlawitschka, Gerik Scheuermann** Leipzig University, Germany **Enhancing Visual Perception and Directing Viewer's Attention in Interactive Direct Volume Rendering** **AmirAli Sharifi, Pierre Boulanger** University of Alberta, Canada **A semantically adaptable integrated visualization and natural exploration of multi-scale biomedical data** **Ricardo Millan[1], Asan Agibetov[2], Jan Rzepecki[1], Marta Ondrésik[3], Alexander Vais[1], Joaquim Miguel Oliveira[3], Giuseppe Patanè[2], Karl-Ingo Friese[1], Rui L. Reis[3], Michela Spagnuolo[2], Franz-Erich Wolter[1]** [1]Leibniz University of Hannover, Germany; [2]Consiglio Nazionale delle Ricerche, Italy; [3]Bs research Group, University of Minho, Portugal	**Session iV2015_2.4: Visualization, Art, and Design** Chair: Prof. Mao Lin Huang, University of Technology, Sydeny, Australia; Tianjin University, China **User Interface Considerations for Browser-Based Just-in-Time-Retrieval** **Christin Seifert, Jörg Schlötterer, Michael Granitzer** Passau University, Germany **Quick Vis: A Web-Based Visualization Delivering Flexible Exploration of User-Driven Analytics** **Alessandro Simone Agnello, Haim Levkowitz** University of Massachusetts Lowell, United States of America **Visualizing Süleymaname: Analyzing and Visualizing Embedded Spatiotemporal Information in a 16th Century Illustrated Manuscript** **Ferhat Şen** Aalto University School of Arts, Design and Architecture, Department of Media, Finland **Senescence: An Age-Based Character Simulation Framework** **Suren Deepak Rajasekaran, Nicoletta Adamo-Villani** Purdue University, United States of America **Examining User Experiences Through A Multimodal BCI Puzzle Game** **Fotis Liarokapis[1], Athanasios Vourvopoulos[2], Alina Ene[3]** [1]Masaryk University, Czech Republic; [2]University of Madeira, Portugal; [3]Coventry University, UK **Perceived Realism of Crowd Behaviour with Social Forces** **Stuart O'Connor[1], Fotis Liarokapis[2], Chrisina Jayne[1]** [1]Coventry Univeristy, United Kingdom; [2]Masaryk University, Czech Republic
11:15	< The University of Barcelona ● Facultat de Dret > *Break*	

11:45 - 13:00	< The University of Barcelona • Facultat de Dret • **Aula Magna** > **Session iV2015_2.5: Visualisation** Chair: Prof. Randolph George Goebel, University of Alberta, Canada **Visual Analysis of Eye Movements by Hierarchical Filter Wheels** **Marcel Hlawatsch, Michael Burch, Daniel Weiskopf** University of Stuttgart, German <keynote Lecture> **Simulation and Visualization of Deformation with Anisotropic Materials** **Feng Lin** Nanyang Technological University, Singapore
13:00	< The University of Barcelona • Facultat de Dret > *Lunch Break*

14:15 - 15:30	< The University of Barcelona • Facultat de Dret • **Aula 1**> **Session iV2015_2.6: Information Visualisation - Application** Chair: Prof. Marjan Trutschl, Louisiana State University Shreveport, USA **Visualization of Crowd-Powered Impression Evaluation Results** **Erika Gomi, Yuri Saito, Takayuki Itoh** Ochanomizu University, Japan **Web based Time-tunnel: An Interactive Multidimensional Data Visualization Tool Using Genetic Algorithm** **Ryuya Akase, Yoshihiro Okada** Kyushu University **ThreadCity: Combined Visualization of Structure and Activity for the Exploration of Multi-threaded Software Systems** **Sebastian Hahn, Matthias Trapp, Nikolai Wuttke, Jürgen Döllner** Hasso-Plattner-Institut, Germany **ConcentriCloud: Word Cloud Visualization for Multiple Text Documents** **Steffen Lohmann, Florian Heimerl, Fabian Bopp, Michael Burch, Thomas Ertl** University of Stuttgart, Germany	< The University of Barcelona • Facultat de Dret • **Aula 5**> **Session iV2014_2.7: Knowledge Visualization and Visual Thinking** Chair: Bernhard Klein, Future Cities Laboratory, Singapore-ETH Centre, Singapore **The Role of Visual Templates on Improving Teamwork Performance** **Marta Perez Garcia[1], Sabrina Bresciani[2]** [1]Birmingham City University, United Kingdom; [2]University of St. Gallen, Switzerland **What You See is What You Get: The Impact of Perceived Finishedness (PF) on Visual Contribution Fluency during Electronic Ideation** **Lawrence McGrath** University of St. Gallen, Switzerland **Knowminer Search - a Multi-Visualisation Collaborative Approach to Search Result Analysis** **Manuela Rauch[1], Werner Klieber[1], Ralph Wozelka[1], Santokh Singh[1], Vedran Sabol[1,2]** [1]Know Center, Austria; [2]Graz, University of Technology **Navicons for collaboration: Navigating and augmenting discussions through visual annotations** **Martin J. Eppler[1], Michael H.G. Hoffmann[2], Sebastian Kernbach[1,3]** [1]University of St. Gallen; [2]Georgia Institute of Technology; [3]University of Lugano

14:15 - 15:30	< The University of Barcelona • Facultat de Dret • **Aula 6** >	< The University of Barcelona • Facultat de Dret • **Aula 7**>
	Session iV2015_2.8: Information Visualization Chair: Prof. Takayuki Itoh, Ochanomizu University, Japan Shortpapers: **An experience of information visualization and interaction for aphasic persons** **Mariko Sasakura[1], Saori Iikuma[1], Yukihiro Izawa[2]** [1]Okayama University, Japan; [2]Fukuyama City University, Japan **Visualization on Agglomerative Information Bottleneck Based Trajectory Clustering** **Yang Fan, Qing Xu, Yuejun Guo, Sheng Liang** Tianjin University, Tianjin, China, China, People's Republic of **Service Oriented Architecture for Data Visualization in Smart Devices** **Nikolas Jorge Santiago Carneiro, Carlos Gustavo Resque Santos, Tiago Davi Oliveira de Araujo, Brunelli Pinto Miranda, Jairo de Jesus Nascimento da Silva Junior, Bianchi Serique Meiguins** Universidade Federal do Pará, Brazil **The Usefulness of the Virtual Speaking Head, as Well as 3D Visualization Tools in the New Communication, Teaching and Presentation Technologies is almost Unlimited.** **Eva Pajorova** Slovak Academy of Sciences, Slovak Republic	**Session iV2015_2.9: Visualisation in Built & Rural Environments** Chair: Prof. Vineet Kamat, University of Michigan, USA **Impact of Visual Cues on Climate Perception in Virtual Urban Environments: a User Study** **Toinon Vigier, Guillaume Moreau, Daniel Siret** **Development of a Computational Design Application for Interactive Surfaces** **Marianthi Leon, Daniel Doolan, Richard Laing, Julian Malins, Huda Salman** RGU, United Kingdom **Monuments Visualization: from 3D scanned data to a holistic approach, an application to the city of Aberdeen** **Richard Laing, Marianthi Leon, John Isaacs** RGU, United Kingdom
15:15	< The University of Barcelona • Facultat de Dret >	
	Break	

15:45 - 17:00	< The University of Barcelona • Facultat de Dret • **Aula 1**> **Session iV2015_2.10: VA - Visual Analytics** Chair: Dr Fatma Bouali, University of Lille 2, France **Hybrid Visualization: A New Approach to Display Instances and Attributes Relationships in a Single View** **Danilo Medeiros Eler, Renan Augusto Pupin de Oliveira, Lenon Fachiano Silva** UNESP, Univ Estadual Paulista, Brazil **A Visualization of Research Papers Based on the Topics and Citation Network** **Rina Nakazawa[1], Takayuki Itoh[1], Takafumi Saito[2]** [1]Ochanomizu University, Japan; [2]Tokyo University of Agriculture Technology, Japan **Regularity Measure and Influence Weight for Analysis and Visualization of Consumer's attitude** **Aki Hayashi, Masahiro Kohjima, Tatsushi Matsubayashi, Hiroshi Sawada** NTT Service Evolution Laboratories, NTT Corporation, Japan **A Visualization-Analytics-Interaction Workflow framework for Exploratory and Explanatory Search on Geo-Located Search Data using the Meme Media Digital Dashboard** **Jonas Sjöbergh[1], Xingkai Li[2], Randolph George Goebel[2], Yuzuru Tanaka[1]** [1]Hokkaido University, Sapporo, Japan; [2]University of Alberta, Edmonton, Canada	< The University of Barcelona • Facultat de Dret • **Aula 5**> **Knowledge Visualization and Visual Thinking Symposium Planning session**

15:45 - 17:00	< The University of Barcelona • Facultat de Dret • **Aula 6** >	< The University of Barcelona • Facultat de Dret • **Aula 7**>
	Session iV2015_2.11: Information Visualisation Chair: Prof. Mao Lin Huang, University of Technology, Sydeny, Australia; Tianjin University, China	**Session iV2015_2.12: Information Visualization** Chair: Prof. Masood Masoodian, The University of Waikato, New Zealand
	A Visual Tool to Help Select Photogenic Locations **Kouhei Hamada[1], Kazuo Misue[2]** [1]Department of Computer Science, University of Tsukuba, Ibaraki, Japan; [2]Faculty of Engineering, Information and Systems, University of Tsukuba, Ibaraki, Japan	**DiagrammaticCHR: A Diagrammatic Representation of CHR Programs** **Nada Ahmed Hamed Sharaf[1], Slim Abdennadher[1], Thom Frühwirth[2]** [1]The German University in Cairo, Egypt; [2]University of Ulm
	A Survey of Visual and Interactive Methods for Air Traffic Control Data **Linda Pfeiffer, Nicholas Hugo Müller, Paul Rosenthal** Technische Universität Chemnitz, Germany	**An ontology-driven visual Question-Answering Framework** **Hajer Baazaoui-Zghal** Riadi, ENSI Campus Universitaire de la Manouba, Tunisia
	An investigation of the environment of schizophrenia genes using Multi-Dimensional Scaling **Aparna Basu[1], Suman Ray[2], Frizo Janssens[3]** [1]Formerly at NISTADS, New Delhi, India, India; [2]National Institute of Science Technology and Development Studies, New Delhi, India; [3]Formerly at Electrical Engineering (ESAT), Katholieke Universiteit Leuven, Leuven, Belgium	**Visualizing Timed, Hierarchical Code Structures in AscoGraph** **Grigore Burloiu[1], Arshia Cont[2]** [1]University Politehnica of Bucharest; [2]IRCAM STMS UMR, CNRS, INRIA, UPMC
		An Analysis and Visualization Tool for DBLP Data **Michael Burch, Daniel Pompe, Daniel Weiskopf** VISUS, Germany
17:00	< The University of Barcelona • Facultat de Dret • **Aula 5**>	
	iV2016 - Committee Members Meeting	

20:00

Thursday 23th July 2015 - Time: 20:30 – 22:30

Visualisation Social Networking Event

Dinning in an ocean view restaurant

Date / fecha: Thursday 23rd July 2015
Time / tiempo: 20:30

Type of Function: Dinning in an ocean view restaurant, El Tunel Del Port.
Location / ubicación: Moll de Gregal, 12
Port Olímpic, 08005 BARCELONA
www.eltuneldelport.com

Nearest Underground Stations: L4 line (yellow) Metro, and get off at "Ciutadella - Vil·la Olímpica" station ~ 10 minutes walk until the restaurant and it is in Avenida Icaria with Ramon Trias Fargas street (not Francisco de Aranda).

Pre-registration is required for this event – deadline 16th July 2015

Friday 24 July 2015

09:00 — < The University of Barcelona • **Facultat de Dret, Avenida Diagonal, 684, 08034, Barcelona** >

Registration

09:30 - 11:15 C

< The University of Barcelona • Facultat de Dret • **Aula 1**>

Session iV2015_3.1: VA - Visual Analytics

Chair: Dr Michael Burch, VISUS, University of Stuttgart, Germany

POIViz: a fast interactive method for visualizing a large collection of Open datasets
Tianyang Liu[1], Fatma Bouali[2], Gilles Venturini[1]
[1]University Francois Rabelais of Tours, France; [2]University of Lille2, France

A fast feature vector approach for revealing simplex and equi-correlation data patterns in reorderable matrices
Celmar Guimarães da Silva, Bruno Figueiredo Medina
University of Campinas - School of Technology, Brazil

Towards ActionTrack 3.0: The Role of Usefulness, Usability and User Experience in a Startup Company Developing Location-Based Applications
Jukka Antero Holm, Kari Laurila
Team Action Zone, Finland

Current Topics in the design of HCI courses with Computer Science Curricula
Minoru Nakayama
Tokyo Institute of Technology, Japan

Detecting Criminal Relationships Through SOM Visual Analytics
Wen Bo Wang[1], Mao Lin Huang1[1,2], Jinson Zhang[1], Wei Lai[3]
[1]University of Technology Sydney, Australia; [2]Tianjin University; [3]Swinburne University of Technology

< The University of Barcelona • Facultat de Dret • **Aula 5**>

Session iV2015_3.2: Information Visualisation – Applications

Chair: Dr. Bernhard Klein, Singapore ETH Centre, Singapore

Interactively Uncluttering Node Overlaps for Network Visualization
Rie Ishida[1], Shigeo Takahashi[2], Hsiang-Yun Wu[2]
[1]Graduate School of Frontier Sciences, The University of Tokyo, Chiba 277-8561, Japan; [2]Graduate School of Information Science and Technology, The University of Tokyo, Tokyo 133-8565, Japan

Multiscale Visualization of Trajectory Data
Sheng Liang, Qing Xu, Yuejun Guo, Yang Fan
Tianjin University, Tianjin, China, China, People's Republic of

Adjasankey: Visualization of huge hierarchical weighted and directed graphs
Joris SANSEN, Frédéric LALANNE, David AUBER, Romain BOURQUI
Université de Bordeaux, France

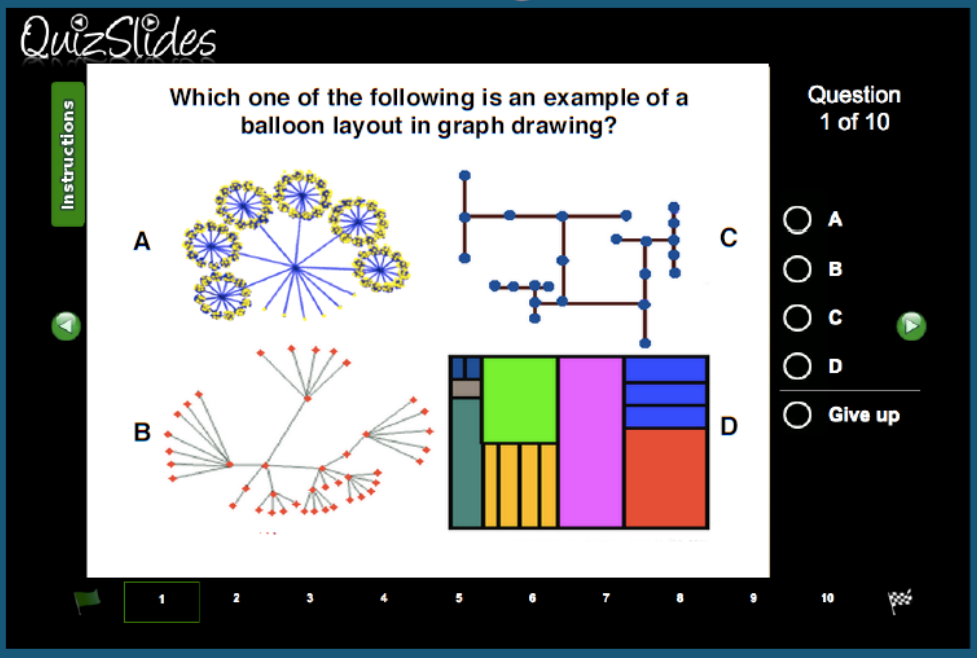
Literature Visualization and Similarity Measurement based on Citation Relations
HANADI HUMOUD ALFRAIDI, WonSook Lee, David Sankoff
University of Ottawa, Canada

3D Visualization of Multiscale Video Key Frames
Shihua Sun, Qing Xu, Yuejun Guo, Sheng Liang, Yang Fan
Tianjin University, China, People's Republic of

09:30 - 11:15 Cgiv C	< The University of Barcelona ● Facultat de Dret ● **Aula 6** >	< The University of Barcelona ● Facultat de Dret ● **Aula 7**>
	Session iV2015_3.3: Information Visualisation – Applications Chair: Sebastian Kernbach, University of St. Gallen, Switzerland **Software Systems as Archipelagos of Atolls** **Giuseppe Scanniello, Ugo Erra, Maria Caulo** University of Basilicata, Italy **A Visualization Technique to Support Searching and Comparing Features of Multivariate Datasets** **Hiroaki Kobayashi[1], Hiroko Suzuki[2], Kazuo Misue[1]** [1]University of Tsukuba, Japan; [2]Fujitsu Laboratories Ltd. **Focus and Context Awareness Visualization Techniques for 3D Modelling Tasks using Multi-Layered Displays** **Masood Masoodian[1], Azmi bin Mohd Yusof[2], Bill Rogers[1]** [1]The University of Waikato, New Zealand; [2]Universiti Tenaga Nasional, Malaysia **Enhancing Software Visualization with Information Retrieval** **Rita Francese[1], Michele Risi[1], Giuseppe Scanniello[2]** [1]University of Salerno, Italy; [2]University of Basilicata, Italy	**Session CGiV2015_3.4: Computer Graphics & Imaging & Visualisation** Chair: Prof. Feng Lin, Nanyang Technological University, Singapore **Reverse Engineering of Planar Objects using Imperialist Competitive Algorithm** **Misbah Irshad, Muhammad Sarfraz, Malik Zawwar Hussain** Lahore College for Women University, Pakistan **CosMovis: Semantic Network Visualization by Using Sentiment Words of Movie Review Data** **Hyoji Ha, Wonjoo Hwang, Sungyun Bae, Hanmin Choi, Hyunwoo Han, Gi-nam Kim, Kyungwon Lee** Ajou University, Life Media Interdisciplinary Program, South Korea **Automatic, Real Time, Unsupervised Spatio-temporal 3D Object Detection Using RGB-D Cameras** **Manal H. Alassaf, Kamran Kowsari, Jamed K. Hahn** The George Washington University, USA **Video Object Tracking Using Interactive Segmentation and Superpixel Based Gaussian Kernel** **GUOHENG HUANG, Chi Man PUN, Cong Lin** University of Macau, Macau S.A.R. (China) **A Solution for Making Multiview Videos: from Cameras to Display** **Jae-Sook Cheong, Sangwon Ghyme, Ilkwon Jeong** Electronics and Telecommunications Research Institute, Next Generation Content Research Division, South Korea
11:15	< The University of Barcelona ● Facultat de Dret >	
	Break	

11:45 - 13:00	< The University of Barcelona • Facultat de Dret • **Aula Magna** > **Session iV2015_3.5: Information Visualisation** Chair: Prof. Urska Cvek, Louisiana State University Shreveport, USA **A Mobile Personal Residential Electricity Dashboard** **Mark Apperley[1], Jishaal Kalyan[2]** [1]University of Waikato, New Zealand; [2]Infinity, Auckland, New Zealand <keynote Lecture> **Space, Time and Visual Analytics: a Multiple Perspectives Paradigm** **Gennady Andrienko** Fraunhofer Institute for Intelligent Analysis and Information systems (IAIS), Germany and City University London, UK
13:00	< The University of Barcelona • Facultat de Dret > *Lunch Break*
14:00	Close

Knowledge test!



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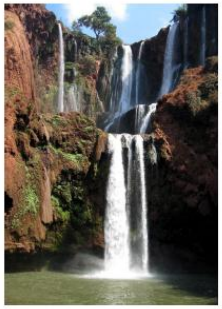

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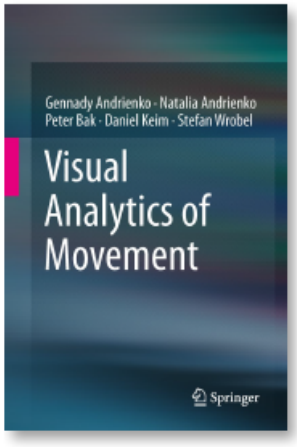

2013, XVIII, 387 p. 200 illus., 178 illus. in color.

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G. Andrienko, N. Andrienko, P. Bak, D. Keim, S. Wrobel

Visual Analytics of Movement

- Presents a multidisciplinary approach, combining methods e.g. visualization, data mining, cartography, and geographi information science
- Introduces a general conceptual framework for the analysis movement data from various sources
- Illustrates all algorithms and methods with the help of samp applications from various domains

Many important planning decisions in society and business depend on proper and a correct understanding of movement, be it in transportation, logistics, bi life sciences. Today the widespread use of mobile phones and technologies lik RFID provides an immense amount of data on location and movement. What are new methods of visualization and algorithmic data analysis that are tightly and complement each other to allow end-users and analysts to extract useful from these extremely large data volumes.

This is exactly the topic of this book. As the authors show, modern visual analy techniques are ready to tackle the enormous challenges brought about by mo data, and the technology and software needed to exploit them are available t

The authors start by illustrating the different kinds of data available to describ movement, from individual trajectories of single objects to multiple trajectori objects, and then proceed to detail a conceptual framework, which provides t for a fundamental understanding of movement data. With this basis, they mo more practical and technical aspects, focusing on how to transform movemen make it more useful, and on the infrastructure necessary for performing visual practice. In so doing they demonstrate that visual analytics of movement data exciting insights into the behavior of moving persons and objects, but can als understanding of the events that transpire when things move. Throughout th use sample applications from various domains and illustrate the examples wit depictions of both the interactive displays and the analysis results.

In summary, readers will benefit from this detailed description of the state of t in visual analytics in various ways. Researchers will appreciate the scientific pr involved, software technologists will find essential information on algorithms systems, and practitioners will profit from readily accessible examples with de illustrations for practical purposes.

Information visualisation is the field of study that is concerned with the development of methods for transforming abstract, complex data into visual representations in order to make that data more easily communicable and understandable. This volume reviews recent developments in information visualisation techniques, their application, and methods for their evaluation. It offers a wide range of examples of applied information visualisation from across disciplines such as history, art, the humanities, science and technology. Beginning with an examination of its medieval origins, it presents theoretical and applied approaches to information representation, including two and three-dimensional cartographic rendering and navigation techniques. In addition, it explores the language of shapes and how it can be employed to further the visualisation of multifaceted data. As a whole, this collection emphasises the important role that the visualisation process plays in extracting, analysing, and presenting the hidden layers of meaning found within large and complex data sets.

Topics and Features:

Contributions from an international collection of researchers and authors.
An introduction to the discipline of information visualisation, its current state of affairs, and its future trends.
A discussion of information visualisation's origins, providing an important historical context for the field.
A comprehensive review of methods for shaping and rendering two and three-dimensional representations of abstract information.
The visualisation of interconnected networks of data in order to extract their causal relationships.
An approach to hierarchical structuring and re-structuring of information by applying methods of two-dimensional data mapping.
Application of common metaphors for visualizing computer code.
Visualisation analysis of historical events and their relationships.
A review of methods for evaluating information visualization tools, concepts, and methodologies, and recommendations for their application.

Dr Ebad Banissi is Professor of Informatics at London South Bank University, UK, where he heads the Visualisation and Graphics Research Unit.

Dr Francis T. Marchese is Professor of Computer Science at Pace University, New York, USA, where he is founder and director of Pace's Center for Advanced Media, and founder and co-director of the Pace Digital Gallery.

Dr Camilla Forsell and **Dr Jimmy Johansson** are researchers and academics at the Norrköping Visualization Centre, and members of the Department of Science and Technology, Linköping University, Sweden.

Cover image: *500 Companies as glyphs colored by stock return deciles with arms indicating correlations to macro-market factors grouped by sector with small offsets to aid visual discrimination* © Richard Brath, 2014

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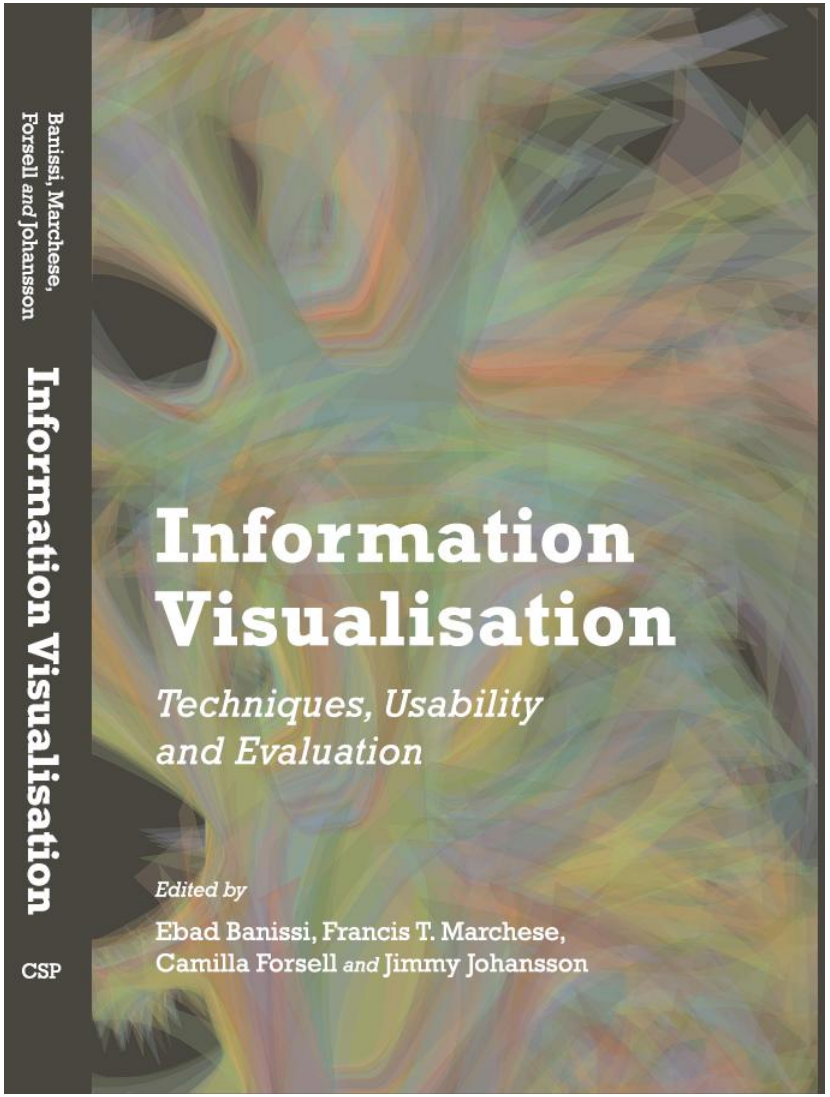
Banissi, Marchese, Forsell *and* Johansson

Information Visualisation

CSP



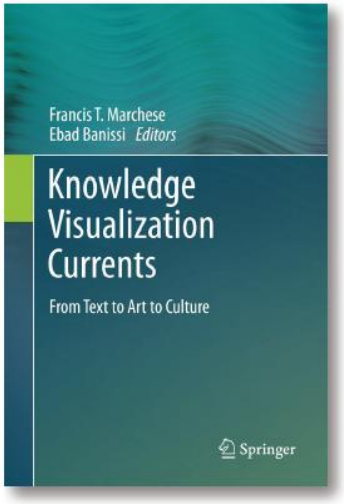
Information Visualisation

Techniques, Usability and Evaluation

Edited by

Ebad Banissi, Francis T. Marchese, Camilla Forsell *and* Jimmy Johansson

Springer



2013, XV, 224 p. 96 illus., 64 illus. in color.

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F.T. Marchese, E. Banissi (Eds.)

Knowledge Visualization Currents

From Text to Art to Culture

- **Presents the state of the art in visualization research and development**
- **Highlights research developing at key intersections with other disciplines and its applicability to addressing complex real-world problems**
- **Discusses how visualization researchers are addressing complex issues of representation in knowledge, art, and culture**

Lying at the intersection of education, art, and cultural heritage, visualization is a powerful tool for representing and interpreting complex information.

This unique text/reference reviews the evolution of the field of visualization, providing innovative examples of applied knowledge visualization from disciplines as varied as law, business management, the arts and humanities. With coverage of theoretical and practical aspects of visualization from ancient Sumerian tablets through to twenty-first century legal contracts, this work underscores the important role that the process of visualization plays in extracting, organizing, and crystallizing the concepts found in complex data.

Topics and features:

- Contains contributions from an international selection of preeminent authorities
- Presents a thorough introduction to the discipline of knowledge visualization, its current state of affairs and possible future developments
- Examines how tables have been used for information visualization in historical textual documents
- Discusses the application of visualization techniques for knowledge transfer in business relationships, and for the linguistic exploration and analysis of sensory descriptions
- Investigates the use of visualization to understand orchestral music scores, the optical theory behind Renaissance art, and to assist in the reconstruction of an historic church
- Describes immersive 360 degree stereographic visualization, knowledge-embedded embodied interaction, and a novel methodology for the analysis of architectural forms

This interdisciplinary collection of the state of the art in knowledge visualization will be of considerable interest to researchers from a broad spectrum of backgrounds in both industry and academia.

London South Bank University

The Design Space of Typeface

Richard Brath and Ebad Banissi

Objective

Font attributes, such as **bold** and *italic*, can be used to encode data in visualization.

Some **visual attributes** have been **researched extensively** but **typography** has not: until now, it has been usually considered a single attribute.

Novel attributes are important because they expand the design space of potential visualizations representations.

"We shape our tools then our tools shape us."
- Marshall McLuhan

Hypotheses

Typography has *variety of different visual attributes* that can be used, separately or together to encode categoric and quantitative data. As a result unique new kinds of visualizations can be created.

Method

1. **Classify**: Many fields use shape and type. What attributes do they use?
2. **Encode**: Can these attributes go beyond differentiating between categories, e.g. encode quantities?
3. **Relate**: What are the similarities between the font attributes and well researched attributes? This provides insight into potential effectiveness of the attribute.
4. **Explore**: How can these attributes be applied? What are some potential novel encodings?

Table of Visual Attributes

		Information Visualization Researchers												Vision Rech	Cartography
		Bertin 67	Cleveland 85	Mackinlay 86	Wehrend 90	Ware 00	Munzner 14	Roth 13	Chen, Floridi 13	Manovich 11	Ware 13	Healey 12	MacEachren 95	Tyner 10
Transform	Position	X	X	X		X	X	X	X	X			X	X
	Length		X	X			X	X	X	X	X			
	Size (Area)	X	X	X	X	X	X	X	X	X			X	X
	Orientation	X		X	X	X	X	X	X	X			X	X
	Volume		X	X			X		X					X
Colour	Brightness	X		X	X	X	X	X	X	X	X		X	X
	Hue	X	X	X	X	X	X	X	X	X	X		X	X
	Saturation			X	X	X	X	X	X	X			X	X
Texture	Granularity	X	X		X	X	X	X	X				X	X
	Pattern				X	X	X	X	X					
	Orientation				X	X			X					
Relation	Connection			X			X	X	X					
	Containment			X			X	X	X					
Optics	Blur				X			X					X	X
	Transparency				X			X					X	X
	Stereo Depth								X					
	Concavity							X	X					
	Light Direction							X	X					
	Shadow							X						
	Partial occlusion							X						
Movement	Flicker					X		X	X					
	Speed					X		X	X					
	Direction							X	X					
Shape	Shape	X	X		X	X	X	X	X				X	X
	Arcite		X	X			X	X	X					
	Curvature						X		X	X				
	Mark						X			X				
	Line Ending						X	X	3	X				
	Closure						X		X	X				
	Local Warp						X							
	Edge Type						X		1,2					
	Corner Type						X		3					
	Icon, glyph, etc								4					
Type	Text Labels			X	X		X	X	X					
	Punct Symbol			X			X							
	Pair Delimiters						X							
	Weight			X			X							
	Italic/Oblique			X			X							
	Case/Sm Caps			X			X							
	Underline						X							
	Condensed/Exp			X			X							
	Spacing						X							
	Superl/subscript			X			X							
	X-height						?							
	Angle of Stress						?							
Misc	Numerosity								X		X			
	Spatial Grouping								X	Y	X			X
	Arrangement									Y			X	X
	Resolution												X	X
	Artistic Effects										X			

1. Classify

There are many fields and examples to draw on. From these **define a list of potential attributes**.

2. Encode

Many font attributes encode *categoric* DATA some attributes support quant**ities:**

Visual Attribute	Samples	Categoric Examples	Quantitative Examples
Text Glyph	A, B, ?	characters, words	- (but alpha-orderable)
Symbols, etc	$\#_{\mathcal{J}}, \#_{\mathcal{P}}$	marks	-
Delimiter pair	{ } " " **	contained items	-
Font weight	A A **A A**	-	light/book/bold/black/etc
Case	in In IN	lower/upper/ proper/smallcaps	-
Oblique/Italic	*A A*	normal/italic/reverse	-
Underline	A A A	normal/single/wavy/etc	-
Condensed	**A A**	-	condensed/expanded/etc
Font family	**A A A**	Arial/Times/Courier/...	-
Spacing	AA A A	-	tracking/leading
Super/subscript	A^{A}_{A}	super/sub	-

Text labels also support other encodings:

- *Literal encoding*: i.e. the literal text
- *Ordered encoding*: i.e. alphabetic order
- ***Proportional*** *encoding*: i.e. modify elements of the character sequence to encode data [Bra14].

3. Relation to Visual Channels

Type attributes can be **mapped to well known visual channels**, e.g. bold increases the overall intensity across the text area and at a micro-level the width of a glyph's stroke.

This mapping allow visual channel heuristics to be applied to type attributes, such as ranking alternative attributes, or assessing potential separable/ integral combinations of multiple attributes.

	Position	Length,Size	Orientation	Intensity	Shape	Containment
Text Glyph					◆	
Symbols					◆	
Delimiter pair						◆
Font weight		+		◆		
Case		+			◆	
Oblique/Italic			◆			
Underline	◆	+				
Condensed			◆		+	
Font Family					◆	
Spacing			◆		+	
Super/subscript	◆	+				

4. Explore Applications

Stem+leaf plot with bold and underlines for quartiles, mean and standard deviation.

The **flights** *of the 1902* **glider** *had* **demonstrated** *the* **efficiency** *of our* **system** *for* **maintaining equilibrium,** *and also the* **accuracy** *of the* **laboratory** *work upon which the* **design** *of the* **glider** *was* **based.** *We then felt that we were* **prepared** *to* **calculate** *in* **advance** *the* **performance** *of* **machines** *with a degree of* **accuracy** *that had never been possible with the* **data** *and* **tables possessed** *by our* **predecessors.** *Before leaving camp in 1902 we were already at* **work** *on the general* **design** *of a new* **machine** *which we* **proposed** *to* **propel** *with* **a motor.**

Text formatted for **skimming**, weighting uncommon words.

Discussion

There are at least **ten font-specific attributes to be exploited** by Information visualization.

A. *Novel Applications*: Many possibilities to consider, such as search facets, proportional encoding of quantities along strings, knowledge maps, enhanced labeling such as cartograms.

B. *Evaluation*: While visual channel mappings may help short term, more evaluation is required, such as user testing or novel metrics.

C. *Background*: There is 500+ years of typographic history to explore.

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London South Bank University | Big Data & Informatics Research Group

Knowledge Management and Information Retrieval System

Design a system to build Knowledge Management and Information Retrieval System that is based on document and text analysis. This is centred on the frame-work that use textual attributes for visual analytics purpose. This KMIR system is envisaged the following components:

1. Visualisation on Text
    a. Search & Visualisation
    b. Skim Formatting of Previews
2. Visualization on Lists
    a. Search listing
    b. Proportional Encoding
    c. Entity Extraction
3. Language Analytics
    a. Linguistic Analysis
    b. Topic Modelling
    c. Characteristic Analysis
    d. Sentiment Analysis

Application intended:

Skimming System (online and off line)
Geo-based Knowledge Map
Typography and Cartography
Methodology Development

We're looking for:

Students with skills in Apps development, User experience and learning & education and interface design. Applicants should have a strong ambition to design and build technologies to make people's lives better.

Further Information contact: Ebad Banissi | Richard Brath : banisse | brathr @lsbu.ac.uk

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Edited by

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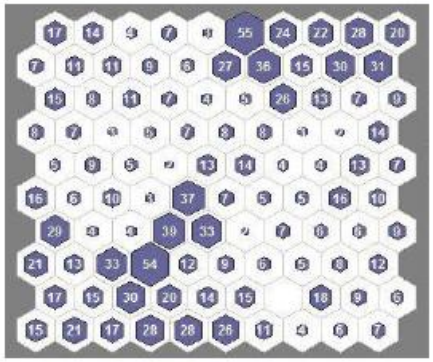

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