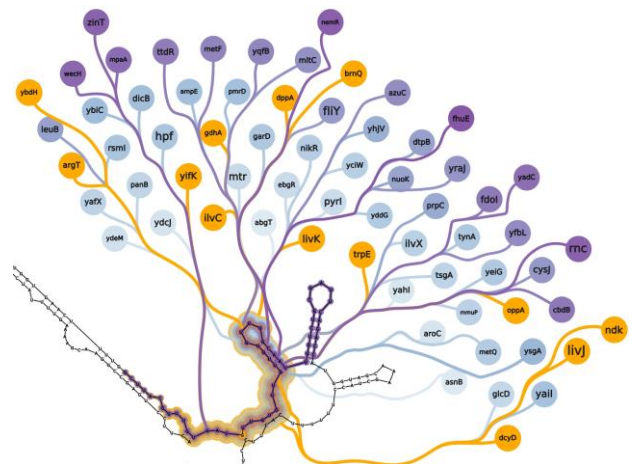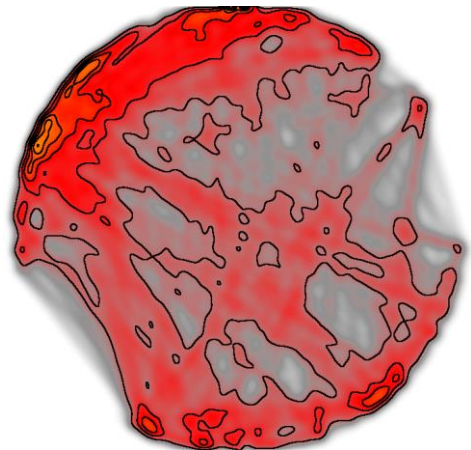# iV16 Lisboa

Information Visualization

- Biomedical Visualization, Visualisation on Built and Rural Environments & Geometric Modelling and Imaging -

Edited by

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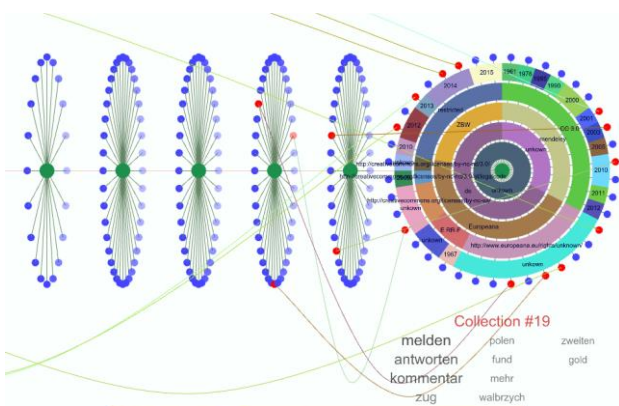
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To our dear friend Frank

This proceedings is dedicated our dear friend Francis T. Marchese who sadly passed away on September 21 2015.

Dr. Francis T. Marchese was a 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. He was an active member of the Information Visualization (iV) forum for a number years and founding member of the Software Visualization symposium and later Visualization, Art, & Design and co-chair of Digital Humanities Knowledge Visualization. He was also the publication coordinator for the iV conference and co-editor of the post conference collection under the titles of Information Visualization - Techniques, Usability & Evaluation published by Cambridge Scholars Publishing, and Knowledge Visualization Currents: From Text to Art to Culture published by Springer. Frank had a keen interest in both science and art and in particular the history of art & science reflected in his latest works, writing and lectures. This interest lead to a collection of publications and analytical studies of historical evidence of the roots of visualization and, in particular, information visualization was always intriguing and he sought ways to abridge this to current techniques to create fascinating stories behind his historical findings. His storying telling through visual artifacts is presented in some of his latest writing, such as the story of Virtues and Vices to mapping of Medieval Knowledge Visualization or The Gothic Cathedral design and emblem through the lens of Information Visualization Space or how information visualized through the ages writing such as The Origins and Rise of Medieval Information Visualization and Exploring the Origins of Tables for Information Visualization.

Frank was a dear friend to many of us that formed the iV Forum and he will be missed immensely.

Ebad Banissi
On behalf of Organising committee

Cover Image Credits

LEFT:
```top

### Using Micro-Visualisations to Support Faceted Filtering of Recommender Results
Gerwald Tschinkel, Robert Hafner, Peter Hasitschka, and Vedran Sabol
*Know-Center GmbH, Graz University of Technology*
> Figure 3: New RD main visualisations: uRank (top) and
> topical landscape (center) for topical exploration, and the
> history graph (bottom) for query history navigation.

```middle:

### Exploring the Central India Art of the Gond People: contemporary materials and cultural significance
Sidharth Arur, Theodor Wyeld
*Flinders University, Australia*
> Figure 5: Tree of Life (Shyam, 2015)


RIGHT
```top
### Isoline-Enhanced Dynamic Graph Visualization
Michael Burch_*VISUS, Germany*
> Fig. 7. Different color scales result in differently aesthetically appealing images: (a) Topographic color
> scale. (b) Cold hot with white bipolar color scale. (c)
> Linear optimal color scale. (d) Traffic light color scale.

```bottom
### Visualization of sRNA-mRNA interaction predictions
*Joris Sansen mailto, Patricia Thébault mailto, Isabelle Dutour mailto, Romain Bourqui*
University of Bordeaux, France
> Figure 2: (a) Visualization of the gcvB sRNA secondary structure with the 100 best predicted mRNA
> targets. Hulls have been colored according to the prediction scores. (b) and (c) Zoom on the two highly
> interacting regions of gcvB together with the corresponding mRNA targets. Experimental validated
> targets have been highlighted in orange.

# Preface

In the current information era, most aspects of life depend on and are driven by data, information, knowledge, user experience, and culture. The infrastructure of an information-dependent society relies on the quality of data, information and analysis of such entities for short to long term and past to future activities. Information Visualisation, Visual Analytics, Business Intelligence and application domains are just a few of the current state of the art developments that effectively enhance understanding of these driving forces. There are a number of key interdependent variables emerging that are becoming the focus of scientific activities, such as: Information and data science, an aspect that closely couples raw data (origin, capture, classification, incompleteness, impurity, filtering) and data scale to knowledge acquisition such that its dependencies on domain of application and its evolution steers the next generation of research conduct. Processing the relationship between these stages, from the raw data to visualisation, has added new impetus to the way these are understood and communicated. The tradition of use and communication by visualisation is deep rooted and helps us investigate new meanings for cultural heritage, the history of art, design, human factors and user experience. Modern day computer assisted analytics and visualisation has added momentum in developing tools that exploit 2D and 3D metaphoric techniques within many applied domains. The techniques are developed beyond visualisation to simplify the complexities, to reveal ambiguity, and to work with incompleteness. The next phase of this evolving field is to understand uncertainty and risk analysis; how this uncertainty is built into the processes that exists in all stages of the process, from raw data to the knowledge acquisition stage.

This collection of papers on information visualization, compiled for the iV2016 conference, advocates that a new conceptual framework will emerge from information rich disciplines like the Humanities, Psychology, Sociology and Business as well as the science-rich disciplines. To facilitate this credence, iV2016 provides the opportunity to resonate with a number of international collaborative research projects as well as keynote lectures from distinguished speakers that channels the way this new framework conceptually, as well as practically has been realised.

Joining us in this search are some 70 plus researchers who reflect and share a chapter of their thoughts with fellow researchers. The papers collected here reflect the vibrant state of Information Visualisation, Analytics, applications and results of the work of researchers, artists and professionals from more than 20 countries. It has allowed us to address the scope of visualisation from a much broader perspective. Each contributor to this conference has indeed added fresh perspective and thought, challenged our beliefs and encouraged further our adventure of innovation. I, on behalf of all editors of this book, am grateful to all the authors for sharing their valuable work with the information visualisation community.

**Ebad Banissi & Theodor Wyeld**
*On behalf of editors*