

# Selected Ideas and Methods in Knowledge Visualization

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## ABSTRACT

*Selected themes presented in this article were presented at the 16<sup>th</sup> International Conference on Information Visualization (IV 2012) and the Computer Graphics, Imaging, and Visualization Conference (CGIV 2012), which gather artists, scientists, mathematicians, and other participants using digital imagery and data or involved in visual storytelling, art, and graphics. Figures show art works presented at an online virtual exhibition, the Symposium and Gallery of Digital Art (D-Art), which complements these events. The article examines selected theoretical approaches and recent technology sessions related to data, information, and knowledge visualization, among other current issues in the visualization domain.*

*Keywords:* Applications of Graph Theory, Data Mining and Analytics, Geometric Modeling & Imaging, Informatics, Interactive and Visual Data Clustering, Open Source Intelligence, Visualization, Visual Thinking

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## INTRODUCTION

This text tells about selected themes presented at the 16<sup>th</sup> International Conference on Information Visualization (IV, 2012) held on 11-13 July 2012 in Montpellier, France at LIRM CNRS University Montpellier II (<http://www.graphicslink.co.uk/IV2012/>). The Symposium and Gallery of Digital Art (D-Art), an online virtual exhibition (<http://www.graphicslink.co.uk/DART.htm>) accompanies two annual international conferences: the Information Visualization Conferences and the Computer Graphics, Imaging, and Visualization Confer-

ences. Artists, scientists, mathematicians, and other participants using digital imagery and data or involved in visual storytelling, art, and graphics contributed to these events. Images selected from 30 works created by participants of this year D-ART Gallery illustrate this text. This Gallery was also presented at Techfest in Bombay, Mumbai India January 3-5 2013. Along with the International Conferences on Information Visualization (IV Conferences), several annual international conferences pertain to visualization related domains; examples are provided at the end of this text.

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## SELECTED THEORIES AND RECENT TECHNIQUES RELATED TO DATA, INFORMATION, AND KNOWLEDGE VISUALIZATION

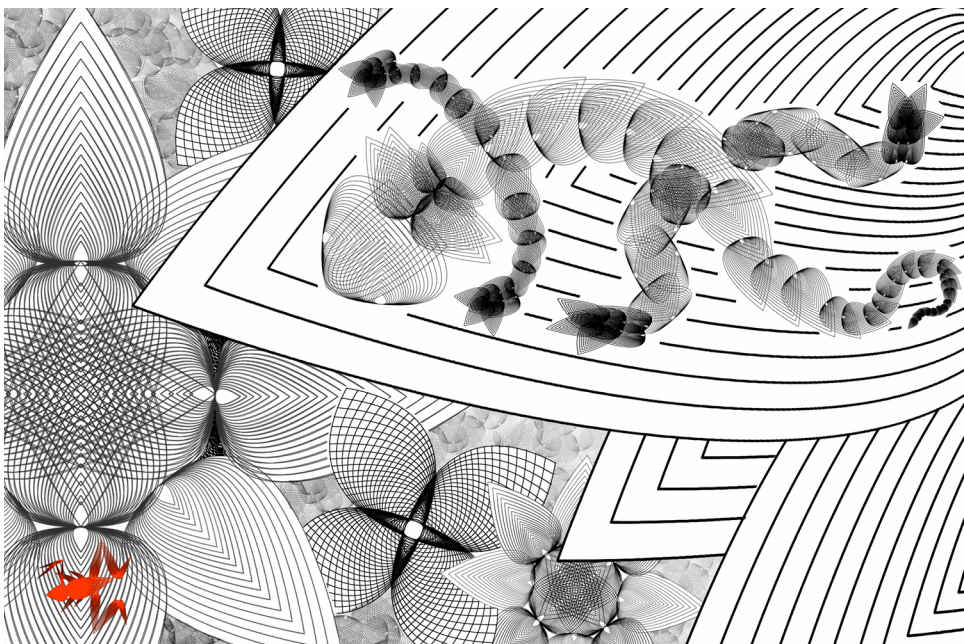
Contributors of the 16<sup>th</sup> iV Conference explored theoretical and technological approaches to data, information, and knowledge visualization. Inquiry about theoretical thinking encompassed studies on knowledge visualization and visual thinking, art and design visualization, co-operative design visualization, coordinated & multiple views in exploratory visualization, visual social media analytics, open source intelligence and web mining, augmented reality visualization and art, applications of graph theory, computer games and their applications (cga), geometric modeling & imaging, and digital heritage knowledge visualization. Sessions related to techniques applied in the visualization domain included applications, usability and evaluation, advances in interactive and visual data clustering, data mining

and analytics, visualization in built & rural environments, biomedical visualization and informatics, among other issues.

Figure 1 shows one of the works presented at D-ART Gallery. “Geek-O” is a study of symmetry in natural world, in this case in living organisms such as plants or animals, depicted in terms of symmetric geometrical patterns showing both bilateral and radial symmetry.

Themes under theoretical considerations included an essay “Augmented reality technology and art: the analysis and visualization of evolving conceptual models” by Vladimir Geroimenko. The essay provides a conceptual analysis of major types of augmented reality (AR) and the resulting conceptual model applied to the emerging field of Augmented Reality Art. The author articulates a general definition of AR as artwork exhibited in a real-world environment using AR technology, which is without spatial or temporal limits and can easily be made animated and interactive. According to the author, augmented reality applications can be divided into two classes depending on whether

*Figure 1. Cody Gallagher, Geek-O. (© 2012, C. Gallagher. Used with permission)*



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