# Special Issue on information visualisation

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In the current information era, most aspects of life depend on and driven by data, information, knowledge and user experience. The infrastructure of an information-dependent society and drive for new innovation and direction of activities heavily relies on the quality of data, information and analysis of such entities from past to its projected future activities. Information Visualisation, Visual Analytics, Business Intelligence, machine learning 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 several key interdependent determinants emerging that are becoming the focus of scientific activities, such as: raw data (origin, autonomous capture, classification, incompleteness, impurity, filtering), data scale transformation to knowledge acquisition and its dependencies on domain of application. Processing the relationship between these stages, from the raw data to visualisation, has added new impetus to the way these are understood and communicated. Visualisation has been one of the most used methods in presenting data and generating insights [1]. The tradition of use and communication by visualisation is deep rooted and helps us investigate new meanings by application to the humanities, history, art & design, and human factors & user experience studies. Modern day computer assisted analytics and visualisation has added momentum in developing tools that exploit metaphor-driven 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 exist in all stages of the process, from raw data to the knowledge acquisition stage.

The international conference on *information visualisation* (iV), one of the longest running on the subject has open forum philosophy of interdisciplinary drive to define its subject theme and discussion and focus group [2]. This special issue of Journal of Visual Languages and Computing is based on the handful submission to the 20th international conference on *information visualisation (iV16).* The selected paper gives example of techniques, domains and number of case studies to address some issues

Lamy et al. [3] paper "Rainbow boxes: a new technique for overlapping set visualisation and two applications in the biomedical domain", addresses a well-known problem: visualisation of overlapping sets. It presents a novel technology for visualising sets called rainbow boxes. This technology presents data in a tabular format in which set elements are displayed in columns while sets containing the elements are presented as rectangular boxes across different columns. A heuristic is implemented to draw optimal rainbow boxes with a limited number of holes and increase information density. Techniques is used is generic and it is applied in the field of biometrics (drug properties and gene annotation) user cases study.

Toeda et al. [4] paper "Convergent drawing for mutually connected directed graphs" shows that an edge bundling technique is effective for directed graphs. Its three main features enhances graph & network visualisation : edges connecting two nodes of same pairs of clusters are bundled as ordinary bundling techniques; proper distances between bidirectional bundles are maintained, and adjacent bundles connecting to the same cluster are converged.

Discovering movement patterns of people has been one of the main activities for security and monitoring purposes. It remains as an open problem to develop effective visual analytical methods as people flow datasets continue to grow larger and more complex. The third paper by Miyagi et al. [5] paper "Classification and visualisation for symbolic people flow data", presents a new visualisation method that features compression and data mining techniques to address this. Experiment result show that this technique is effective in classifying trajectories.

Visualisation of time-variant behaviour change has wide reaching application. Burch [6] in his paper "Exploring density regions for analysing dynamic graph data" introduces an isoline-enhanced dynamic graph visualisation. It has interactive feature for further exploration. The method was demonstrated by real-world dynamic graph datasets and with visual parameters such as different metaphors and layouts.

Effective use of *space* is one of the key attributes of visualisation as it impacts user experience and influence the information density. Wu et al. [7], in the paper "Overlap-free Labelling of clustered networks based on voronoi tessellation", experiments on this aspect annotation and layout. It is experimented with annotating network nodes. This was achieved by adjusting forces on nodes to allow spaces for labelling. The benefits of the approach have been demonstrated with experiments in which visual clutter caused by label overlaps was effectively alleviated.

Liu et al. [8] paper, "A physiognomy based method for facial feature extraction and recognition", use physiognomy as tool to visualise interesting application in relationships between personality and facial features through classification for effective identification of personality.

**References**


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