

# Preface

## IV 2023

Do aspects of our lives depend on and are driven by data, information, knowledge, user experience, and cultural influences in the current information era? Does the infrastructure of any information-dependent society rely on the quality of data, information, and analysis of such entities from past and present and projected future activities and, most importantly, how it is intended to be applied? Information Visualization, Analytics, Machine Learning, Artificial Intelligence, and Application domains are state-of-the-art developments that effectively enhance understanding of these well-established drivers. Several key interdependent variables are emerging that are becoming the focus of scientific activities, such as Information and Data Science. Aspects tightly tie raw data (origin, autonomous capture, classification, incompleteness, impurity, filtering) and data scale to knowledge acquisition. Its dependencies on the application domain and its evolution steer the next generation of research activities. From raw data to knowledge, processing the relationship between these phases has added new impetus to understanding and communicating these. The tradition of use and communication by visualization is deep-rooted. It helps us investigate new meanings for the humanities, history of art, design, human factors, and user experience, leading to knowledge discoveries and hypothesis analysis. Modern-day computer-aided analytics and visualization have added momentum in developing tools that exploit metaphor-driven techniques within many applied domains to simply storytelling through data. The methods are developed beyond visualization to simplify the complexities, reveal ambiguity, and work with incompleteness. The next phase of this evolving field is to understand uncertainty, risk analysis, and tapping into unknowns; this uncertainty is built into all stages of the processes, from raw data to the knowledge acquisition stage. But there is a new twist: fast-developing generative AI with ever-increasing access to data outsmarting humans in decision-making. A new evolutionary step in the human journey, no doubt.

This collection of papers on this year's information visualization forum, compiled for the 27<sup>th</sup> conference on Information Visualization incorporating the following: Artificial Intelligence – analytics, machine-, deep-learning, and Learning Analytics - IV2023, advocates that a new conceptual framework will emerge from information-rich disciplines like the Humanities, Psychology, Sociology, Business of everyday activities as well as the science-rich disciplines. To facilitate this, IV2023 provides the opportunity to resonate with many international and collaborative research projects, lectures, and panel discussions from distinguished speakers that channel how this new framework conceptually and practically has been realized. This year's theme is enhanced further by AI's impact on all aspects of life and learning analysis of today's multifaceted and data-rich environment.

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, peer-reviewed by the international reviewing committee, reflect the vibrant state of information visualization, analytics, applications, and results of researchers, artists, and professionals from more than 25 countries. It has allowed us to address the scope of visualization from a much broader perspective as we step into the age of AI. Each contributor to this conference has added a new view and thoughts that challenge our beliefs and further encourage our adventure of innovation.

**Ebad Banissi**

*On behalf of the editors*