



DIGITAL MEDIA: CONTENT AND COMMUNICATION

Decision Support and Operational Management Analytics

This minitrack builds upon earlier HICSS minitracks on visual analytics, mobile computing, and digital media at scale. It seeks to define analytical methods and technologies that use interactive visualization to meet challenges posed by data, platform, and application; for example:

- ∞ Processing data from archives and real-time streams
- ∞ Predictive and real-time analytics and operations management
- ∞ Multiple roles and tasks within and across organizations
- ∞ Cross-platform interoperability, from mobiles to data walls

Large complex data and web-scale information problems have emerged as common themes across many of the minitracks in the Digital Media track. So, we encourage authors to address these themes from their own research perspectives. Authors are encouraged to bring the lens of their own background and expertise to focus on big data issues ranging from the analytics of the data itself – whether from social media or other data sets – to the design and evaluation of effective presentations for stakeholders.

Both algorithmic “data sciences” approaches and human-centered “visual analytics” human-computer interface methods hold great promise for operationalizing massive datasets and streaming data in support of a broad range of human activities. Applications in basic scientific research, business analytics, health sciences, environmental science and in engineering R&D all explore the implications of these methods for advancement of knowledge and strategic planning. Applications in coordination, command and control of complex human activities such as disaster relief, law enforcement, and anti-terrorism add the constraints of real-time performance and distribution of planning to the challenges faced.

We invite computational, cognitive, and organizational perspectives on advanced data processing and interactive visualization across a range of human endeavors. We also invite participation from researchers who are looking at scaling issues and multi-scale issues, whether these scales refer to the time of decision making, the form-factor and operational constraints of mobile devices, the number of decision makers or the more traditional notion of multi-scale simulation and real world scales of data. *We are particularly interested in approaches that combine computational and interactive analytics in “mixed initiative” systems.*

Advancements are needed in the ability to address large volumes of disparate data, streams from distributed locations, rapid (often real-time) response, and techniques focused on platforms ranging from mobile to high-performance computing. Gaining maximum benefit from these datasets also demands novel ways of supporting the judgment of skilled human decision-makers, such as information visualization, human-information interaction, and studies of individual and collaborative decision-making and coordination of action. Bridging these areas of investigation is key to the success of this minitrack.

We believe that the HICSS setting in particular will encourage the cross-pollination of ideas that will advance the state-of-the-art for this class of problems.

From a computational perspective, the challenges of large-volume data, streaming data, and reduced response time initially appear to be quite distinct. Upon closer inspection, they are often found to be encountering very similar constraint issues from different perspectives. Fundamentally all algorithms trade off space, time, data volume, and accuracy. If we can solve a problem on a desktop today, we will expect to be able to solve it on an iPhone or Blackberry tomorrow. If we solve it with cluster, cloud, or supercomputing today, we expect to solve it locally, tomorrow. Thus, this minitrack seeks to bring together those working in areas of massive datasets, streaming data, rapid model construction, across a range of computational footprints and time constraints.

From the human and organizational perspective, Visual Analytics – “the science of analytical reasoning facilitated by interactive visual interfaces” – utilizes computer graphics and interaction design to support human decision-makers to gain new insights into situations characterized by complex data that may contain uncertainty in fact; relevance, location in space, and position in time. Visual analytics seeks to directly address the process of human reasoning with interactive visualizations. It does so by combining the scientific investigation of human perception, cognition and interaction with information with advanced computation, mathematics and statistical analysis methods. Empirical methods range from social sciences approaches to organizational behaviour in technology-enabled organizations to perceptual studies of individuals using interactive visualization environments in order to understand complex datasets.

Research from this minitrack might include environmental science and technologies, natural resources and energy, health and related life sciences, safety and security (aircraft safety, law enforcement, antiterrorism, disaster relief) and business processes. We hope to attract submissions that extend the areas of use to include a broader range of analytic tasks such as science and technology, public health, business intelligence, financial analysis, and other domains where interactive visualization systems may be used to improve human decision-making.

Submissions may include studies of visual analytics and decision support in the context of an organization (e.g. communication between analysts and policy-makers), perceptual and cognitive aspects of the analytic task, and collaborative analysis using visual information systems.

Minitrack Leaders

David Ebert
Purdue University
ebert@purdue.edu

Brian Fisher
Simon Fraser University
bfisher@sfu.ca

Paul Kantor
Rutgers University
Paul.kantor@rutgers.edu

Carolyn Watters
Dalhousie University
Email: cwatters@dal.ca