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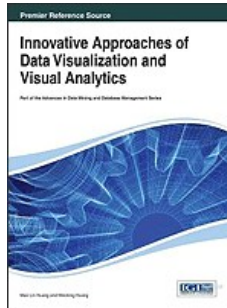
Innovative Approaches of Data Visualization and Visual Analytics

by Mao Lin Huang and Weidong Huang (eds)

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Innovative Approaches of Data Visualization and Visual Analytics

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A volume in the Advances in Data Mining and Database Management (ADMDM) Book Series

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About the Contributors

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Luis Carli is a postgraduate researcher at the University of São Paulo, his research is about how programming helps in the graphic design process of information visualization. He was a visiting researcher in the Interface Culture department of the Kunstuniversität of Linz in 2011, he has presented works on the International Architecture Biennial of São Paulo in 2009, and on the International Festival of Electronic Language (FILE) in 2009, 2010, and 2011. In his current research study, he focuses on how programming helps develop and prototype graphic design structures for information visualization.

Marco Carnesecchi graduated in Human Computer Interaction in a joint programme between the University of Siena and Florence in May 2012. His thesis regarded the bridge between Information Visualization and studies on Thinking & Reasoning. During his Ph.D. he has been involved in several projects of Interaction Design supported by companies and public institutions regarding the design of user interfaces. He is currently Research Assistant at the University of Valle d'Aosta and he is part of the organizing committee of the Annual Conference of the Italian Cognitive Science association. His research interest concerns also assistive technologies, and studies related to play as a learning tool for children with disabilities.

Barbara Di Eugenio is Associate Professor in the Department of Computer Science at the University of Illinois, Chicago campus. There she leads the NLP laboratory (http://nlp.cs.uic.edu/). She obtained her PhD in Computer Science in 1993, from the University of Pennsylvania. She is an NSF CAREER awardee and a past treasurer of the North American Chapter of the Association for Computational Linguistics. She is one of the founding and managing editors of the Journal of Discourse and Dialogue Research. She was program co-chair of INLG 2012, and she is program-co-chair of SigDIAL 2013. Her research has been supported by NSF, ONR, Motorola, Yahoo!, and the Qatar Research Foundation.

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T. J. Jankun-Kelly is an Associate Professor of computer science and engineering within the James Worth Bagley College of Engineering, Mississippi State University. His research lies at the intersection of scientific and information visualization. Specifically, he seeks to better understand the foundations of these disciplines to increase their effectiveness. He also applies visualization to problems in bioinformatics, computer security, social networks, and other domains. Jankun-Kelly received his Ph.D. from the University of California, Davis, in 2003 and is a member of IEEE and the ACM.

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Tanyoung Kim is a Ph.D. Candidate in Digital Media Program at School of Literature, Media, and Communication, at Georgia Institute of Technology. Her research interest in the domain of digital media studies is the aesthetics and social/political impacts of information visualization. She approaches this interest with the methods from design research, for which her explores modern graphic design history and principles, rhetoric, and new media theories. She is also an active practitioner who makes interactive visualizations with various data. She has worked at Nokia Research Center and NHN corporation where she lead and participated in various projects spanning data visualization, user research, interaction design, information architect for web, application and online games. She holds BS and MS in Industrial Design from

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Andrew Johnson received his Ph.D. in Computer Science from Wayne State University, Detroit, MI, in 1994. He joined the Electronic Visualization Laboratory at the University of Illinois at Chicago in 1995, and joined the Department of Computer Science in 1997 where he is currently an Associate Professor. His research and teaching focus on interaction and collaboration using advanced visualization displays and the application of those displays to enhance discovery and learning. His work focused on projection. Cbased virtual reality displays in the 1990s, and large tiled high-resolution flat panel displays in the 2000s. His current work focuses on the combination of these modalities in hybrid high-resolution virtual reality environments such as cave 2.

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Jason Leigh is a Professor of Computer Science and Director of the Electronic Visualization Laboratory and the Software Technologies Research Center at the University of Illinois at Chicago. Currently he is also a Fellow of the Institute for Health Research and Policy. Prior projects and research for which he is best known include, the OptIPuter, GeoWall, CoreWall, LambdaVision, Tele-Immersion, and Reliable Blast UDP. His research for the past ten years focused on Cyber-Commons-ultra-resolution display-rich collaboration environments amplified by high performance computing and networking. His newest area of research is called Human Augmentics-technologies for expanding the capabilities and characteristics of humans. His work in lifelike avatars has been featured on the Popular Science's Future Of, and he has been profiled on Nova ScienceNow. Leigh also teaches classes in Software Design and Video Game Design.

David Lewis gained his B.Sc. in Electronic Engineering from the University of Southampton in 1987, before working as a electronic design engineer for two years and then undertaking a M.Sc. in Computer Science at University College London (UCL). He worked as a research fellow at UCL between 1990 and 2002, investigating integrated, multi-domain network and service management. In this period he also completed a Ph.D. and worked part time for a network management technology start up. In 2002 he moved to the Knowledge and Data Engineering Group (KDEG) in TCD working in management of pervasive computing systems, knowledge-based networking and autonomic communication systems. He is currently involved in the *Centre for Next Generation Localisation* (CNGL) researching service integration and service management in integration of language technologies, web content and localisation workflows, with a focus on the role of community management. He is currently co-chair of the MultiLingualWeb-Language Technology Working Group at the W3C.

Jie Liang is a PhD candidate of software engineering at the University of Technology Sydney, Australia. She was awarded a university medal with first class honors. Her research focuses on financial data visualization, hierarchical information visualization and evaluation of visual analytics.

Alessandro Marcengo has a bachelor's degree in Psychology (with a major in Human Factors from the University of Torino, Italy, 1998). In 2001 he received his Master's Degree in Cognitive Ergonomics from COREP/Turin Polytechnic. Since 1999 he has worked on human factors and cognitive ergonomics area. Over the years he developed an extensive background on user experience designing and testing advanced user interfaces for mobile services and devices, Internet services and applications, Internet appliances, voice interaction services, etc. Lately he has been conducting in-depth studies on the usage of complex contents on different platforms and devices and the related communication pattern. He teaches several postgraduate courses on human factors and cognitive ergonomics. He has been involved with different roles in several EU projects. At present he's deepening perceptive, cognitive, and affective aspects in data visualization and quantified self.

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John McAuley is a PhD Student in the Centre for Next Generation Localisation at Trinity College Dublin. Before joining Trinity College, he received his master's degree from Dublin Institute Technology. He is currently completing his PhD thesis on the strategic management of peer-production communities. Although his main research area is on the development and maintenance of online communities, he maintains a keen interest on the effective design of visual analytic applications that can be used by non-expert users in domain specific areas. This incorporates an understanding of the principles of design and interaction coupled with an understanding of the principles of effective information visualisation.

Alexander O'Connor is a Post-doctoral Researcher in Digital Content Management for the Centre for Next Generation Localisation at Trinity College, Dublin. Alex's main areas of research are in the future of the Semantic Web, Personalisation and Global Intelligent Content. Alex holds a PhD in Computer Science, which focused on creating richer, more effective links between structured knowledge representations. He has co-authored approximately 20 papers, and has participated in the proposal and operation of several EU and Irish-government-funded projects. In addition to his research work, Alex is a co-founder of Emizar, a CNGL spin-out company which creates high-quality tailored, personalised customer support solutions that draw from enterprise, social and community support content.

Stefania Passera (MA) is a doctoral researcher at Aalto University School of Science, Department of Industrial Engineering and Management, where she is part of the multidisciplinary MIND Research Group. She has a background in graphic design, with a strong interest in information design, layout and typography. The leitmotiv of her work is to explore how design and designers can contribute to new multidisciplinary endeavors and what value their way of thinking and doing bring to the mix. Her current challenge and research topic is how to introduce visualization to a very word-dominated domain: contracts. The idea is to make contracts clearer, easier and user-friendlier through visualization that can help the readers make sense of complex information. Stefania has been working with private and public organizations in Finland on the development of user-centered visual contract documents, combining research and practice.

Amon Rapp. earned a degree in Communication Sciences from the University of Torino, Italy. Since 2006 he's been working in the Research and Trends department in Telecom Italia as a User Experience Researcher. In 2007 and 2009 he won a research scholarship "Progetto Lagrange" in HCI Complex Systems sponsored by Telecom Italia, the Department of Computer Science at University of Torino and Fondazione C.R.T. At present he works as a User Experience Researcher in the Interdepartmental Research Center on Multimedia and Audiovisual of the University of Torino. He's also attending a PhD Program in Sciences of Language and Communication at the Computer Science Department at University of Torino. His main research areas are about the use of game design elements in Interactive Systems, User Experience Research Methodologies and Systems of Data Visualization.

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Antonio Rizzo is Full Professor of Cognitive Science and Technology at the University of Siena (2001-present). He was Director of the Academy of Digital Arts and Science–ArsNova in Siena (2004-2010) and chair of the European Association of Cognitive Ergonomics (2000-2006). From 1996 to 1999 he led the Human Factors Division of the Italian Railways constituted for introducing Human Factor Engineering principles in work processes. Research activities concern both theoretical and pragmatical aspects of artefacts in human psychological life.

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Anthony Savidis holds a Phd in Electronic Engineering from the University of Kent, UK (1999) is an Associate Professor (since 2007) of the Department of Computer Science, University of Crete and is an affiliated researcher at the Institute of Computer Science, FORTH (since 1999). His research interests are in the broader area of Programming Languages, Software Engineering and Applications: 1.) integrated design and implementation of novel programming languages: language, compiler, virtual machine, standard libraries, tools, debugger, integrated development environment; and 2.) software engineering methods, tools and applications: adaptive, automatically generated and distributed interactive systems; design tools and environments; defensive programming and fault tolerance.

Kamran Sedig is an Associate Professor in the Department of Computer Science and the Faculty of Information and Media Studies at Western University, Canada. He holds a Ph.D. in Computer Science from the University of British Columbia. He has been doing research in the area of human-centered interactive visualizations since 1993. He is interested in the design of computer-based computational tools that help people perform information-intensive complex cognitive activities, such as sense making, decision making, data analysis, and learning. As such, his research and publications span a range of topics such as information visualization, visual analytics, human-information interaction design, information interface design, health informatics, digital cognitive games, and cognitive and learning technologies. In the past few years, he has been working on the development of comprehensive frameworks that make the design and evaluation of visualizations and interactions more scientific.

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Yiwen Sun received her Ph.D. in computer science from the University of Illinois at Chicago in 2012, where she conducted research on interactive visualization and visual analytics. More specifically, her Ph.D. focused on developing a methodology for automatically translating natural language into visualizations. She currently works at Microsoft Corporation.

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Moonyati Yatid received a degree in Design and Information Sciences Engineering from Wakayama University, Japan in 2009. In the same year she began her Ph.D. studies majoring in Human-Computer Interactions in University of Sydney, Australia. Her research focuses on the areas of human factors and cognitive ergonomics related to collaboration technologies. This includes the design and evaluations of hardware and software tools to support better user experience (UX).

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