

EuroVis 2021
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Preface

EuroVis 2021, the Eurographics / IEEE VGTC Conference on Visualization was scheduled to be held in Zürich, Switzerland from June 14 to June 18th, 2021. We were looking forward to bringing the international data visualization community together at the conference in Zürich.

Unfortunately, the ongoing COVID-19 pandemic situation forced again a change in plans for the conference, and the conference committee chose to re-organize the event as a virtual conference. While we cannot convene in Zürich, we look forward to sharing this year's program in an online event. As last year, the EuroVis proceedings will be again published under a Gold Open Access model that makes the papers available to everyone.

EuroVis has been an annual event since its inception in 1990. Over the years, the venue has changed names. It was originally started as the Eurographics Workshop on Visualization in Scientific Computing, and was called VisSym between 1999 and 2005. Since 2005, the conference has been called the Eurographics / IEEE VGTC Conference on Visualization, or EuroVis for short. This change of name is fitting: the conference broadly covers the field of data visualization. Topics include visualization techniques for spatial data, such as volumetric, tensor, and vector field datasets, and for non-spatial data, such as graphs, text, and high-dimensional datasets. EuroVis also covers the theory of visualization, hardware acceleration, large datasets, perception, interaction, user studies, information visualization, visual analytics, and many application areas of visualization. EuroVis is a global event. While it has always been held in Europe, the community comes from around the globe. This year, the Full Papers International Program Committee consisted of 88 members representing the global visualization research community, from Australia, North America, Asia and Europe. The papers are similarly from around the world.

The full-papers proceedings for EuroVis are published as a special issue of the Computer Graphics Forum journal. In 2021 the process of selecting papers for the proceedings took place according to plan. 173 complete manuscripts were submitted in early December 2020, a slight increase from the year before. Authors were given the option of anonymous submission, although International Program Committee members have always been able to see the author identities in the submission system. The conference review process this year used a significantly revised, more structured review form, and a formal rebuttal stage. During a first review cycle, each paper received four reviews, two from members of the International Program Committee (IPC) and two from external reviewers selected by the IPC members. The four reviewers held an online discussion. During the discussion process, the Paper Chairs invited rebuttals from authors, which were made available to all four reviewers of each paper. The four reviewers for each paper then recommended conditional acceptance or rejection to the Full Papers Program Chairs. Based on the recommendations and responses, the Papers Chairs selected one of three outcomes for each paper: conditional acceptance, a recommendation for fast-track consideration in Computer Graphics Forum, or rejection. Papers conditionally accepted in the first round were revised by the authors and subject to a second round of review. After the second round of review, 44 papers were accepted, yielding an acceptance rate of 25.43%. Seven other papers were invited to a “fast-track” process to undergo revision for consideration in a future issue of Computer Graphics Forum.

The EuroVis conference also recognizes the best papers submitted to the conference through Best Paper Awards. This year, the Full Paper Chairs nominated five manuscripts, then a Best Paper Committee formed of Kay Nieselt, Roxana Bujack, and Tim Dwyer made the final selection of a Best Paper and an Honorable Mention. The Best Paper Award this year went to “Color Nameability Predicts Inference Accuracy in Spatial Visualizations”, by Khairi Reda, Amey A. Salvi, Jack Gray, and Michael E. Papka. The paper has novel contributions with potential impact across the whole field of visualization, challenging generally accepted visualization “dogma”, and following interesting yet precise methodology with clear findings. The Honorable Mention Award this year went to “What are Table Cartograms Good for Anyway? An Algebraic Analysis”, by Andrew McNutt. The paper proposes Algebraic Visualisation Analysis as a way to evaluate the effectiveness of visualisations. It brings rigour to the problem of appraising effectiveness of specific visualisation techniques against tasks.

In recognition of the importance of the review process, this year the Full Paper Chairs instituted a Best Reviewer Award and an Honorable Reviewer Award. The inaugural Best Reviewer award was made to IPC member Cagatay Turkey, in recognition of his high quality, timely, detailed, balanced and thorough reviews. Along with the entire community, we mourn the loss of IPC member Michel Westenberg. Michel completed his IPC tasks with panache, timeliness, and generosity despite being severely ill. The Honorable Reviewer award this year was made posthumously to Michel Westenberg.

We would like to thank everyone who has made the event possible. We thank the authors of all submissions for providing us with such a broad range of exciting work to select from. We thank the International Program Committee for their work in identifying external reviewers and guiding the review process. We thank the reviewers for their work in selecting the papers and providing feedback to authors. We thank the chairs of the other conference tracks for their help in making EuroVis such a successful event: Short Papers chairs Andreas Kerren, Christoph Garth, and Marco Agus; STAR chairs Noeska Smit, Katerina Vrotsou, and Bei Wang; the Posters Chairs Jan Byška, Stefan Jänicke, and Johanna Schmidt; and all the chairs of the co-located workshops. We thank Stefanie Behnke for her assistance in preparing the publications, and James Stewart for his swift assistance with the review software system. We thank the EuroVis steering committee for giving the Papers Chairs flexibility to implement experimental changes to the papers process, and in particular to Barbora Kozlíková and Claudio Silva for helping out with one conflict of interest situation affecting all three Full Paper Chairs. And we thank the General Chairs, Tobias Günther and Renato Pajarola, for their efforts in creating the conference and re-imagining it as the world situation required.

Technical conferences, such as EuroVis, serve an important role in bringing the research community together to share ideas. While the COVID-19 pandemic precludes us from coming together physically, we still value the opportunity to share ideas and collegiality.

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Invited Talk: Keynote

Visualization is where Information Theory Meets Psychology

Min Chen

University of Oxford

Abstract

Building a theoretical foundation for visualization and visual analytics is a collective responsibility of the community of visualization and visual analytics (VIS). There are many pathways for making contributions to this endeavour, including through the observation, development, and evaluation of practical VIS applications. In this talk, the speaker will focus on one particular pathway that connects VIS with information theory and psychology. One can anticipate such connections easily since all VIS processes deal with information while involving human perception and cognition. In most applications of information theory, such as communication, compression, and encryption, encoders and decoders are developed as pairs of machine-centric solutions. VIS offers an intriguing platform for studying phenomena and developing applications that feature machine-centric encoders and human-centric decoders, providing opportunities for advancing information theory. Meanwhile, any improvement of our fundamental understanding of visualization processes and visual analytics workflows – through information theory or any helpful theoretical development – will likely inform theoretical discourse in psychology. It is our ambition as well as obligation to find theories that can explain and measure phenomena in VIS, and predict the cost-benefit and guide the optimization of visual designs and visual analytics workflows. Hopefully such VIS theories will inspire further advancement in other disciplines including information theory and psychology.

Short Biography

Min Chen developed his academic career in Wales between 1984 and 2011. He is currently Professor of Scientific Visualization at Oxford University and a fellow of Pembroke College. His research interests include many aspects of data science in general, and visualization and visual analytics in particular. He has co-authored over 200 publications, including his recent contributions in areas such as theory of visualization, visual analytics for machine learning, and perception and cognition in visualization. He has worked on a broad spectrum of interdisciplinary research topics, ranging from the sciences to sports, and from digital humanities to cybersecurity. His services to the research community include papers co-chair of IEEE Visualization 2007 and 2008, Eurographics 2011, IEEE VAST 2014 and 2015; co-chair of Volume Graphics 1999 and 2006, EuroVis 2014; associate editor-in-chief of IEEE Transactions on Visualization and Computer Graphics; editor-in-chief of Computer Graphics Forum; and co-director of Wales Research Institute of Visual Computing. He is a fellow of British Computer Society, European Computer Graphics Association, and Learned Society of Wales. URL: <https://sites.google.com/site/drminchen/>

Invited Talk: Capstone

Slowing Down How We Think With Visualisations

Yvonne Rogers

UCLIC, University College London

Abstract

Most visualisations and data science tools have been developed to speed up human cognition so that users can efficiently and rapidly draw conclusions from the emerging patterns and anomalies being shown from their datasets. A core UX technique is filtering, enabling the selection and switching on and off of various options, at the touch of a finger. However, the downside of this kind of ‘speed-dial’ interaction is it often results in fixed ways of inspecting and ‘seeing’ data, preventing users from developing different ways of querying and exploring data. How can we design the UX side of visualisations to encourage other kinds of thinking out of the box? An alternative approach we have been developing is to deliberately design the UX to slow down users’ thinking. In particular, we have been developing agents that can probe the user, make suggestions, and even contest their thinking at opportune times. While this approach may seem counter-intuitive, we suggest that for certain settings and tasks, it can encourage different lines of thinking; disrupting routinized problem-solving steps and facilitating more creativity. In so doing, our aim is to enable users to visualise more possibilities in their own minds when interacting with external visualisations. In my talk, I will describe our recent research into how to design the UX to support a slower way of thinking.

Short Biography

Yvonne Rogers is a Professor of Interaction Design, the director of UCLIC and a deputy head of the Computer Science department at University College London. Her research interests are in the areas of interaction design, human-computer interaction and ubiquitous computing. A central theme of her work is concerned with designing interactive technologies that augment humans. A current focus of her research is on human-data interaction and human-centered AI. Central to her work is a critical stance towards how visions, theories and frameworks shape the fields of HCI, cognitive science and Ubicomp. She has been instrumental in promulgating new theories (e.g., external cognition), alternative methodologies (e.g., in the wild studies) and far-reaching research agendas (e.g., “Being Human: HCI in 2020”). She has published over 250 articles, including two monographs “HCI Theory: Classical, Modern and Contemporary” and “Research in the Wild”. She is a fellow of the ACM, BCS and the ACM CHI Academy. She was also awarded a Microsoft’s 2016 Research Outstanding Collaborator Awards and a EPSRC dream fellowship concerned with rethinking the relationship between ageing, computing and creativity.