

# EuroVis 2022

**24<sup>th</sup> EG Conference on Visualization**

13 – 17 June 2022

Rome, Italy

**#EuroVis2022 #EuroVis**



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# Welcome to EuroVis 2022

Dear EuroVis attendees,

On behalf of the steering committee, organizing committee, and local organizing institutions, I warmly welcome you in Rome at the 24th edition of EuroVis, the EG/VGTC Conference on Visualization. Eurovis 2022 is organized by the Advanced Visualization and Visual Analytics REsearch group - A.WA.RE - of Sapienza, Università di Roma, and Eurographics, and will take place in the historical Pontifical University of Saint Thomas Aquinas - Angelicum.

I do hope that you will enjoy the scientific program of the co-located workshops and conference, as well as the social events and the charm of Rome, which is hot and chaotic but still “the Eternal City.”

And, on top of that, I really hope you will enjoy meeting our community in presence, eventually a viz-a-viz conference. We prepared the event at our best and with passion, and we wish you to have the same feelings for EuroVis. Enjoy the stay in Rome. We are excited to have you here!

Giuseppe Santucci

EuroVis 2022 General Chair

## Organizers & Sponsors

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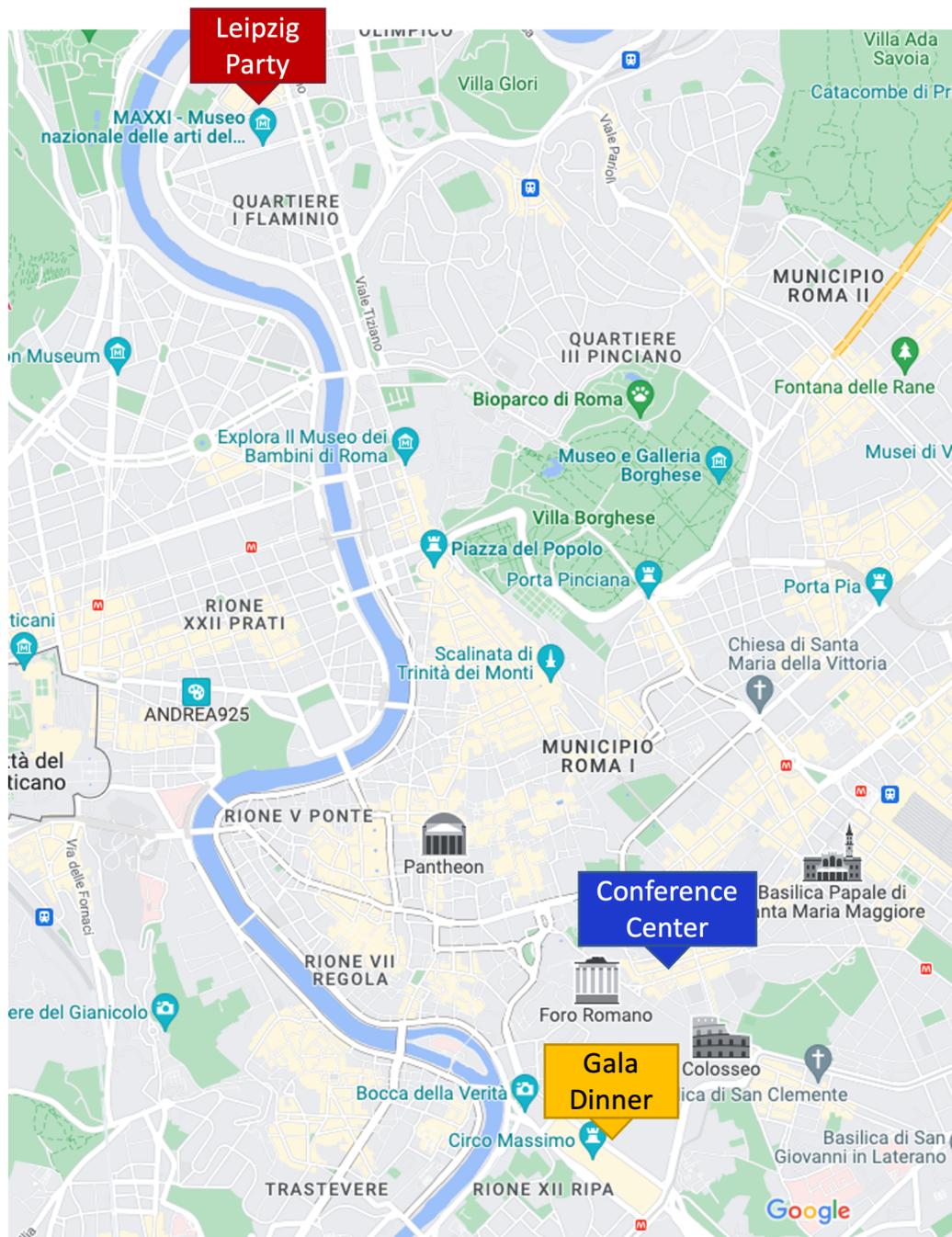
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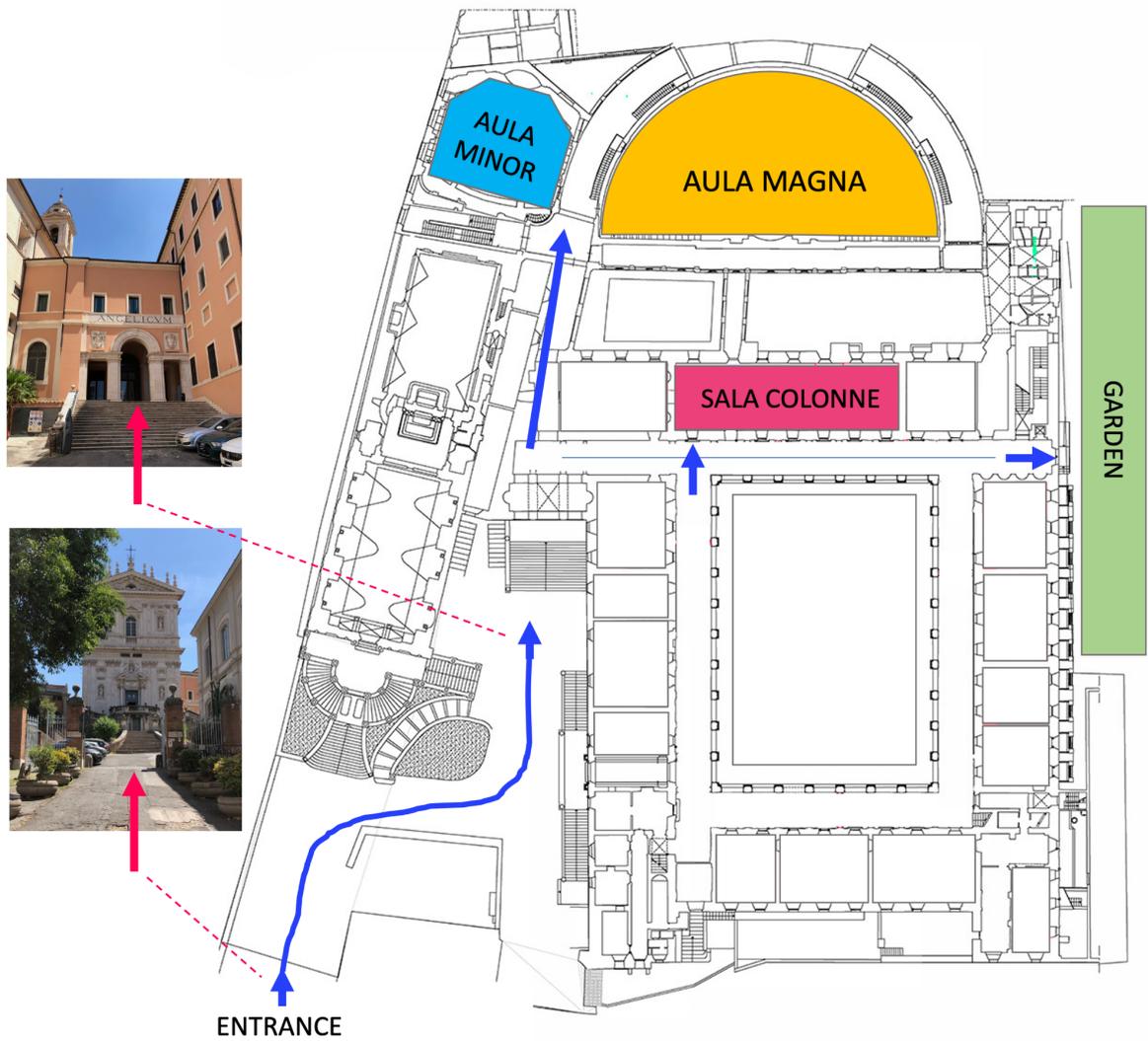
## Events Map

EuroVis 2022 and all co-located events will take place in **Angelicum Congress Center** in the historical center of Rome. It is located close to major attractions such as the Colosseum and a few steps from the Roman Forum. The walking time from the venue to the main subway stations is about 15 minutes.



# Venue Map

## Angelicum Conference Center Map



# Program Overview

| Monday 13 |              |            |                |                |
|-----------|--------------|------------|----------------|----------------|
| Room      | Aula Minor   | Aula Magna | Sala Colonne A | Sala Colonne B |
| 8:00      | Registration |            |                |                |
| 9:00      | EGPGV 1      | EuroVA 1   | MLVis1         | EnvirVis 1     |
| 10:40     | Coffee Break |            |                |                |
| 11:10     | EGPGV 2      | EuroVA2    | MLVis 2        | EnvirVis 2     |
| 12:50     | Lunch        |            |                |                |
| 14:20     | EGPGV 3      | EuroVA 3   | VisGap 1       | Invited C&G    |
| 16:00     | Coffee Break |            |                |                |
| 16:30     | EGPGV 4      | EuroVA 4   | VisGap 2       |                |
| 18:10     |              |            |                |                |

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|-----------------------------|
| Workshop Reception<br>19:00 |
|-----------------------------|

|       | Tuesday 14                      | Wednesday 15           | Thursday 16          | Friday 17                |       |
|-------|---------------------------------|------------------------|----------------------|--------------------------|-------|
| Room  | Aula Magna                      | Aula Minor             | Aula Magna           | Aula Minor               |       |
| 8:00  | Registration                    | Registration           | Registration         |                          |       |
| 9:00  | Opening & Keynote<br>Aula Magna | FP 4                   | FP 5                 | FP 10                    |       |
| 10:40 |                                 | FP 11                  | Coffee Break         |                          |       |
|       | Coffee Break                    | Coffee Break           | Coffee Break         | Capstone, Award, Closing |       |
| 11:10 | FP 1 Best Papers<br>Aula Magna  | FP 6                   | FP 7                 |                          | FP 12 |
| 12:50 | FP 13                           | Lunch                  |                      |                          |       |
|       | Lunch                           | Lunch                  | Lunch                |                          |       |
| 14:20 | FP 2                            | STAR 1                 | FP 8                 | STAR 2                   |       |
| 16:00 | STAR 3                          | SP 2                   | Coffee Break         |                          |       |
|       | Coffee Break                    | Coffee Break           | Coffee Break         |                          |       |
| 16:30 | FP 3                            | SP 1                   | FP 9                 | IND 1                    |       |
| 18:10 |                                 |                        | SP 3                 | SP 4                     |       |
|       | Welcome & poster<br>19:00       | Leipzig Party<br>19:30 | Gala Dinner<br>20:00 |                          |       |

## Co-located Events

Several co-located events are traditionally organized along with the EuroVis conference.

### // EGPGV

**AULA MINOR**

#### **EUROGRAPHICS SYMPOSIUM ON PARALLEL GRAPHICS AND VISUALIZATION**

The Eurographics Symposium on Parallel Graphics and Visualization (EGPGV) aims to foster the exchange of experiences and knowledge on exploiting and defining new trends in parallel graphics and visualization. This area is of growing importance due to the rapidly increasing availability of multi-core CPUs, GPUs, and cluster systems. Computationally demanding and data-intensive applications in graphics and visualization are strongly affected by this trend and require novel, efficient parallel solutions.

<https://www.egpgv.org/>

### // ENVIRVIS

**SALA COLONNE B**

#### **VISUALIZATION IN ENVIRONMENTAL SCIENCES WORKSHOP**

Research in environmental sciences has become more and more important as we are faced with increasing problems concerning climate change, water scarcity, pollution of the environment, or changes in biodiversity. The EnvirVis-workshop invites contributions with a broad application area in environmental research from both visualization and environmental sciences. Our goal is to raise awareness to the importance of visualisation for this domain and to establish a forum for interdisciplinary discussions.

<https://www.informatik.uni-leipzig.de/bsv/envirvis2022/>

**// EUROVA**

**AULA MAGNA**

**INTERNATIONAL EUROVIS WORKSHOP ON VISUAL ANALYTICS**

EuroVA 2021 is the premier workshop to present and discuss fresh ideas on new methods and theories, novel applications, designs, and studies on the use of Visual Analytics methods and systems. The workshop will accept a wide range of contributions within the broad area of Visual Analytics, including novel techniques, systems, applications, evaluation studies and methods, and theoretical foundations, as well as fresh viewpoints on future challenges and critical reflections.

<https://www.eurova.org/>

**// MLVIS 2022**

**SALA COLONNE A**

**INTERNATIONAL WORKSHOP ON MACHINE LEARNING IN VISUALISATION FOR BIG DATA 2022**

The Workshop on Machine Learning in Visualisation for Big Data targeted toward machine learning methods in visualisation from both the machine learning and visualisation communities, addressing how the two technologies can be used together to provide greater insight to end users. The fifth edition of this co-located event will be part-tutorial and part-workshop so as to increase the interaction between researchers.

<https://www.tuni.fi/mlvis2022/>

**THE GAP BETWEEN VISUALIZATION RESEARCH AND VISUALIZATION SOFTWARE DEVELOPMENT**

The VisGap Symposium aims to shed a light on the gap between research and practical applicability, examine the obstacles every researcher faces, and propose solutions to overcome this problem as a community. VisGap'22 aims at gathering experts from all over the visualization community in order to advance the way our field works with software, sustains software, and values the effort our members put into developing said software.

<https://visgap.gitlab.io/visgap22/>

## // MONDAY, 13 JUNE, 2022

|             |  |
|-------------|--|
| 8:00–9:00   | Registration   |
| 9:00–10:40  | <b>EGPGV 1 : Opening and Keynote</b><br><b>Aula Minor Room</b>   |
| 9:00–9:50   | Opening  |
| 9:50–10:40  | To Exascale and Beyond: Accomplishments and Challenges for Large Scale Scientific Visualization<br><i>James Ahrens</i>   |
| 9:00–10:40  | <b>EuroVA 1 : Keynote and Special Q+A</b><br><b>Chair: Jürgen Bernard and Marco Angelini</b><br><b>Aula Magna Room</b>   |
| 9:00–9:10   | Opening  |
| 9:10–9:50   | Keynote<br><i>Helwig Hauser</i>  |
| 9:50–10:10  | Special Q+A Session  |
| 10:10–10:40 | Multivariate Time Series Retrieval with Symbolic Aggregate Approximation, Regular Expression, and Query Expansion<br><i>Yuncong Yu, Tim Becker, and Michael Behrisch</i> |
| 9:00–10:40  | <b>MLVis 1 : Intro, Presentations &amp; Tutorial Component</b><br><b>Chair: Daniel Archambault</b><br><b>Sala Colonne Room A</b>   |
| 9:00–9:10   | Introduction to MLVis  |
| 9:10–9:45   | Machine Learning and Visualisation for Time Series Data<br><i>Ian Nabney</i>   |

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|-------------|---|
| 9:45-10:20  | Statistical Machine Learning for Text Data<br><i>Jaako Peltonen</i>                       |
| 10:20-10:40 | Visualisation of Text and Network Data from the Bloggosphere<br><i>Daniel Archambault</i> |

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|-------------------|--|
| <b>9:00-10:40</b> | <b>EnvirVis 1 : Papers</b><br><b>Chair: Gerik Scheuermann</b><br><b>Sala Colonne Room B</b>  |
| 9:00-9:25         | FloodVis: Visualization of Climate Ensemble Flood Projections in Virtual Reality<br><i>Marzan Tasnim Oyshi, Verena Maleska, Jochen Schanze, Franziskus Bormann, Raimund Dachsel, and Stefan Gumhold</i>            |
| 9:25-9:50         | Tornado Visualizer: Analyzing the Destructive Impact of Tornadoes in the United States<br><i>Nikolaj Vinkel Hansen, Simon Lorentzen, Sofie Widell, Jakob Kusnick, and Stefan Jänicke</i>                           |
| 9:50-10:15        | AtmoVis: Web Based Visualization of Air Quality Data with Interconnected Windows<br><i>Benjamin Powley, Craig Anslow, and David Pearce</i>   |
| 10:15-10:40       | LiDAR Operation and Digital Modeling Visualization to Communicate Stormwater Management at Green Spaces in Developing Regions<br><i>Chien-Yu Lin, Yang Liu, Aidan Ackerman, Douglas Johnston, and Guohang Tian</i> |

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| <b>10:40-11:10</b> | <b>Coffee Break</b> |
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| <b>11:10-12:50</b> | <b>EGPGV 2 : Rendering and Simulation</b><br><b>Aula Minor Room</b>   |
| 11:10-11:45        | Rainbow: A Rendering-Aware Index for High-Quality Spatial Scatterplots with Result-Size Budgets<br><i>Qiushi Bai, Sadeem Alsudais, Chen Li, Shuang Zhao</i> |

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|-------------|--|
| 11:45-12:20 | Profiling and Visualizing GPU Memory Access and Cache Behavior of Ray Tracers<br><i>Max von Buelow, Kai Riemann, Stefan Guthe, and Dieter W. Fellner</i> |
| 12:20-12:50 | Iterative discrete element solver for efficient snow simulation<br><i>Prashant Goswami, Adrian Nordin, and Simon Nysten</i>                              |

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| <b>11:10-12:50</b> | <b>EuroVA 2 : Human-Model Collaboration and Personalization</b><br><b>Aula Magna Room</b>  |
| 11:10-11:35        | ScrutinAI: A Visual Analytics Approach for the Semantic Analysis of Deep Neural Network Predictions<br><i>Elena Haedecke, Michael Mock, and Maram Akila</i>                                      |
| 11:35-12:00        | RankASco: A Visual Analytics Approach to Leverage Attribute-Based User Preferences for Item Rankings<br><i>Jenny Schmid, Lena Cibulski, Ibrahim Al Hazwani, and Jürgen Bernard</i>               |
| 12:00-12:25        | Interactive Visual Explanation of Incremental Data Labeling<br><i>Raphael Beckmann, Cristian Blaga, Mennatallah El-Assady, Matthias Zeppelzauer, and Jürgen Bernard</i>                          |
| 12:25-12:50        | A Comprehensive Workflow For Effective Imitation and Reinforcement Learning With Visual Analytics<br><i>Yannick Metz, Udo Schlegel, Daniel Seebacher, Mennatallah El-Assady, and Daniel Keim</i> |

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| <b>11:10-12:50</b> | <b>MLVis 2 : Papers and Panels</b><br><b>Sala Colonne Room A</b>   |
| 11:10-11:30        | Visual Exploration of Neural Network Projection Stability<br><i>Carlo Bredius, Zonglin Tian, and Alexandru Telea</i>   |
| 11:30-11:50        | Saliency Clouds: Visual Analysis of Point Cloud-oriented Deep Neural Networks in DeepRL for Particle Physics<br><i>Raju Ningappa Mulawade, Christoph Garth, and Alexander Wiebel</i> |

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| 11:50-12:10 | ViNNPruner: Visual Interactive Pruning for Deep Learning<br><i>Udo Schlegel, Samuel Schiegg, and Daniel Keim</i> |
| 12:10-12:40 | Panel  |
| 12:40-12:50 | Close  |

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| <b>11:10-12:50</b> | <b>EnvirVis 2 : Keynote</b><br><b>Chair: Gerik Scheuermann</b><br><b>Sala Colonne Room B</b> |
| 11:10-12:30        | Keynote<br><i>Nadine Fleischhut</i>  |
|                    | Closing  |

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| <b>12:40-14:20</b> | <b>Lunch</b> |
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| <b>14:20-16:00</b> | <b>EGPGV 3 : Large scale visualization</b><br><b>Aula Minor Room</b>  |
| 14:20-14:55        | Massively Parallel Large Scale Inundation Modelling<br><i>Arne-Tobias Rak, Stefan Guthe, and Peter Mewis</i>  |
| 14:55-15:30        | A Flexible Data Streaming Design for Interactive Visualization of Large-Scale Volume Data<br><i>Qi Wu, Michael Doyle, and Kwan-Liu Ma</i>           |
| 15:30-16:00        | Automatic In Situ Camera Placement for Large-Scale Scientific Simulations<br><i>Nicole Marsaglia, Manish Mathai, Stefan Fields, and Hank Childs</i> |

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| <b>14:20-16:00</b> | <b>EuroVA 3 : Applications</b><br><b>Chair: Johanna Schmidt</b><br><b>Aula Magna Room</b>  |
| 14:20-14:45        | Toward disease diagnosis visual support bridging classic and precision medicine<br><i>Alessia Palleschi, Manuela Petti, Paolo Tieri, and Marco Angelini</i>                                  |
| 14:45-15:10        | Understanding Business Analysts Needs for Data Report Authoring<br><i>Zhuohao Zhang, Sana Malik, Zhicheng Liu, Shunan Guo, Jane Hoffswell, Ryan Rossi, Fan Du, and Eunyee Koh</i>            |
| 15:10-15:35        | Voyage Viewer: Empowering human mobility at a global scale<br><i>Isabella Loaiza, Tobin South, Germán Sánchez, Serena Chan, Alice Yu, Felipe Montes, Mohsen Bahrami, and Alex Pentland</i>   |
| 15:35-16:00        | CryptoComparator: A Visual Analytics Environment for Cryptocurrencies Analysis<br><i>Pietro Manganelli Conforti, Matteo Emanuele, Pietro Nardelli, Giuseppe Santucci, and Marco Angelini</i> |

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| <b>14:20-16:00</b> | <b>VisGap 1 : Domain Considerations</b><br><b>Sala Colonne Room A</b>  |
| 14:20-15:15        | Keynote: “It works on my machine”-Transporting the open-source universe from a research lab into planetariums<br><i>Alexander Bock</i>   |
| 15:15-15:35        | Visualization Ecology Applications for Measurement Science: A Visualization Gap Approach<br><i>Simon Su, William Sherman, Steve Satterfield, Terence Griffin, Sandy Ressler, William L. George, Shaw Feng, and Judith E. Terrill</i> |
| 15:35-15:55        | Physical Traces and Digital Stories: Exploring the Connections Between Forensics and Visualization<br><i>Victor Schetinger and Saminu Salisu</i>   |

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| 14:20-16:00 | <b>Invited C&amp;G</b><br><b>Chair: Stefan Bruckner</b><br><b>Sala Colonne Room B</b>  |
| 14:20-15:10 | Skyscraper visualization of multiple time-dependent<br><i>Monique Meuschkeac, Samuel Voßab, Franziska Gaidzikab, Bernhard Preima, and Kai Lawonnnc</i> |
| 15:10-16:00 | Stats on-site-Sports spectator experience through situated visualizations<br><i>Wei Hong, Lo Stefanie Zollmann, and Holger Regenbrecht</i>             |

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| 16:00-16:30 | <b>Coffee Break</b> |
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| 16:30-18:10 | <b>EGPGV 4 : GPU based visualization</b><br><b>Aula Minor Room</b>   |
| 16:30-17:05 | Design and Evaluation of a GPU Streaming Framework for Visualizing Time-Varying AMR Data<br><i>Stefan Zellmann, Ingo Wald, Alper Sahistan, Matthias Hellmann, and Will Usher</i>       |
| 17:05-17:40 | GraphWaGu: GPU Powered Large Scale Graph Layout Computation and Rendering for the Web<br><i>Landon Dyken, Pravin Poudel, Will Usher, Steve Petruzza, Jake Chen, and sidharth kumar</i> |
| 17:40-18:10 | Closing  |

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| 16:30-18:10 | <b>EuroVA 4 : Visual Analytics Techniques</b><br><b>Chair: Jean-Daniel Fekete</b><br><b>Aula Magna Room</b>   |
| 16:30-16:55 | A Pipeline for Tailored Sampling for Progressive Visual Analytics<br><i>Marius Hogräfer, Jakob Burkhardt, and Hans-Jörg Schulz</i>                          |
| 16:55-17:20 | Reordering Sets of Parallel Coordinates Plots to Highlight Differences in Clusters<br><i>Elliot Koh, Michael Blumenschein, Lin Shao, and Tobias Schreck</i> |

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| 17:20-17:45 | Codas: Integrating Business Analytics and Report Authoring<br><i>Zhuohao Zhang, Sana Malik, Zhicheng Liu, Shunan Guo, Jane Hoffswell, Ryan Rossi, Fan Du, and Eunyee Koh</i> |
| 17:45-18:10 | Towards Understanding Edit Histories of Multivariate Graphs<br><i>Philip Berger, Heidrun Schumann, and Christian Tominski</i>  |
| 18:10       | Closing  |

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| <b>16:30-18:10</b> | <b>VisGap 2 : Visual Analytics Techniques</b><br><b>Sala Colonne Room A</b>   |
| 16:30-16:50        | Personal Experiences of Providing and Using Research Prototypes<br><i>Tobias Isenberg</i>                                       |
| 16:50-17:10        | Open discussion: Sharing personal experiences, success stories, and pitfalls in software development for visualization research |
| 17:10-18:05        | Keynote: From Research to Tech Translation: Lessons from the Trenches<br><i>Melanie Tory</i>                                    |

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| <b>19:00</b> | <b>Workshop Reception</b><br><b>Angelicum Garden</b> |
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## // TUESDAY, 14 JUNE, 2022

|             |   |
|-------------|---|
| 8:00-9:00   | Registration  |
| 9:00-10:40  | <b>Opening &amp; Keynote</b><br><b>Chair: Tiziana Catarci</b><br><b>Aula Magna Room</b>   |
| 9:00-9:50   | Opening   |
| 9:50-10:40  |  <p>The Art and Science of Data Visualization</p> <p><i>Moritz Stefaner</i></p> <p><i>As an independent “Truth &amp; Beauty Operator”, Moritz Stefaner is constantly chasing the perfect shape for information: how can we create expressive, intriguing, and elegant data experiences? Exploring the art and the science of successful data visualization alike, he will discuss his learnings from pushing the boundaries of the field — from interactive experiences over data sculptures to even using food for representing data.</i></p> |
| 10:40-11:10 | Coffee Break  |
| 11:10-12:50 | <b>FP 1 : Papers Awards Session</b><br><b>Chair: Rita Borgo, Liz Marai, Tobias Schreck</b><br><b>Aula Magna Room</b>  |
| 11:20-11:45 | <p>Of Course it’s Political! A Critical Inquiry into Underemphasized Dimensions in Civic Text Visualization</p> <p><i>Eric Baumer, Mahmood Jasim, Ali Sarvghad, and Narges Mahyar</i></p>   |
| 11:45-12:10 | <p>Visual Analytics of Contact Tracing Policy Simulations During an Emergency Response</p> <p><i>Max Sondag, Cagatay Turkay, Kai Xu, Louise Matthews, Sibylle Mohr, and Daniel Archambault</i></p>  |
| 12:10-12:35 | <p>Rich Screen Reader Experiences for Accessible Data Visualization</p> <p><i>Jonathan Zong, Crystal Lee, Alan Lundgard, JiWoong Jang, Daniel Hajas, and Arvind Satyanarayan</i></p>  |

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| <b>12:40-14:20</b> | <b>Lunch</b>  |
| <b>14:20-16:00</b> | <b>FP 2 : Guidelines and Accessibility</b><br><b>Chair: Emily Wall</b><br><b>Aula Magna Room</b>  |
| 14:20-14:45        | Effective Use of Likert Scales in Visualization Evaluations: A Systematic Review<br><i>Laura South, David Saffo, Olga Vitek, Cody Dunne, and Michelle Borkin</i>  |
| 14:45-15:10        | [J] Show me your face: Towards an automated method to provide timely guidance in visual analytics<br><i>Davide Ceneda, Alessio Arleo, Theresia Gschwandtner, and Silvia Miksch</i>  |
| 15:10-15:35        | How accessible is my visualization? Evaluating visualization accessibility with Chartability<br><i>Frank Elavsky, Cynthia Bennett, and Dominik Moritz</i>   |
| 15:35-16:00        | Seeing Through Sounds: Mapping Auditory Dimensions to Data and Charts for People with Visual Impairments<br><i>Ruobin Wang, Crescentia Jung, and Yea-Seul Kim</i>   |
| <b>14:20-16:00</b> | <b>STAR 1: Multiple Modalities and Mediums</b><br><b>Chair: Stefan Bruckner</b><br><b>Aula Minor Room</b>   |
| 14:20-15:10        | Chart Question Answering: State of the Art and Future Directions<br><i>Enamul Hoque, Parsa Kavehzadeh, and Ahmed Masry</i>  |
| 15:10-16:00        | A Survey on Cross-Virtuality Analytics<br><i>Bernhard Fröhler, Christoph Anthes, Fabian Pointecker, Judith Friedl, Daniel Schwajda, Andreas Riegler, Shailesh Tripathi Clemens Holzmann, Manuel Brunner, Herbert Jodlbauer, Hans-Christian Jetter, and Christoph Heinzl</i> |
| <b>16:00-16:30</b> | <b>Coffee Break</b>   |

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|---|--|
| <b>16:30-18:10</b><br> | <b>FP 3 : Visualization and Machine Learning</b><br><b>Chair: Alfie Abdul-Rahman</b><br><b>Aula Magna Room</b>   |
| 16:30-16:55   | Interactively Assessing Disentanglement in GANs<br><i>Sangwon Jeong, Shusen Liu, and Matthew Berger</i>  |
| 16:55-17:20   | ModelWise: Interactive Model Comparison for Model Diagnosis, Improvement and Selection<br><i>Linhao Meng, Stef van den Elzen, and Anna Vilanova</i>                  |
| 17:20-17:45   | SurfNet: Learning Surface Representations via Graph Convolutional Network<br><i>Jun Han and Chaoli Wang</i>  |
| 17:45-18:00   | Infographics Wizard: Flexible Infographics Authoring and Design Exploration<br><i>Anjul Kumar Tyagi, Jian Zhao, Pushkar Patel, Swasti Khurana, and Klaus Mueller</i> |

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| <b>16:30-18:10</b> | <b>SP 1 : Evaluation &amp; Representation</b><br><b>Chair: Manuela Waldner</b><br><b>Aula Minor Room</b>   |
| 16:30-16:50        | Evaluating Countable Texture Elements to Represent Bathymetric Uncertainty<br><i>Colin Ware and Christos Kastrisios</i>  |
| 16:50-17:10        | How Effective are Uni- and Multivariate Typographic Encodings? Studying the Usage of Font Weight, Oblique Angle, and Spacing<br><i>Andreas Bäuerle, Richard Brath, and Mennatallah El-Assady</i> |
| 17:10-17:30        | Inferential Tasks as an Evaluation Technique for Visualization<br><i>Ashley Suh, Ab Mosca, Shannon Robinson, Quinn Pham, Dylan Cashman, Alvitta Ottley, and Remco Chang</i>                      |
| 17:30-17:50        | Face-Based Glyphs Revisited<br><i>Antonia Schlieder, Philipp Wimmer, and Filip Sadlo</i>   |

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| 17:50-18:10 | SSCA: Situated Space-time Cube Analytics<br><i>Fouad Alallah, Shariff Faleel, Yumiko Sakamoto, Bradley Rey, and Pourang Irani</i> |
|-------------|---|

## // POSTERS

|       |  |
|-------|--|
| 19:00 | <b>Welcome &amp; Poster</b><br><b>Angelicum Garden</b>   |
|       | Scientific Convergence and Divergence in Visualization and Visual Analytics<br><i>Jianguan He</i>  |
|       | GDot-i: Interactive System for Dot Paintings of Graphs<br><i>Peter Eades, Seok-Hee Hong, Martin McGrane, and Amyra Meidiana</i>  |
|       | Digital Twins of Smart Farms<br><i>Yuhang Zhao, Zheyu Jiang, Shanchen Pang, and Zhihan Lv</i>  |
|       | Automatic segmentation of tooth images: Optimization of multi-parameter image processing workflow<br><i>Giovani Bressan Fogalli, Daniel Baum, and Sergio Line</i>  |
|       | Explorative Visual Analysis of Spatio-temporal Regions to Detect Hemodynamic Biomarker Candidates<br><i>Adrian Derstroff, Simon Leistikow, Ali Nahardani, Mahyasadat Ebrahimi, Verena Hoerr, and Lars Linsen</i> |
|       | Visually Explaining Publication Ranks in Citation-based Literature Search with PURE suggest<br><i>Fabian Beck and Cedric Krause</i>  |
|       | Visualizing the Evolution of Multi-agent Game-playing Behaviors<br><i>Shivam Agarwal, Shahid Latif, Aristide Rothweiler, and Fabian Beck</i>   |

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|  | <p>Visual Exploration of Genetic Sequence Variants in Pangenomes<br/> <i>Astrid van den Brandt, Eef M. Jonkheer, Dirk-Jan M. van Workum, Sandra Smit, and Anna Vilanova</i></p>  |
|  | <p>Interactive Visualization of Machine Learning Model Results Predicting Infection Risk<br/> <i>Steffen Schäfer, Tom Baumgartl, Antje Wulff, Arjan Kuijper, Michael Marschollek, Simone Scheithauer, and Tatiana von Landesberger</i></p> |
|  | <p>A Design Space for Explainable Ranking and Ranking Models<br/> <i>Ibrahim Al Hazwani, Madhav Sachdeva, Jenny Schmid, and Jürgen Bernard</i></p>   |
|  | <p>Visual Queries on Bipartite Multivariate Dynamic Social Networks<br/> <i>Alexis Pister, Christophe Prieur, and Jean-Daniel Fekete</i></p>   |
|  | <p>MOBS-Multi-Omics Brush for Subgraph visualisation<br/> <i>Dries Heylen, Jannes Peeters, Jan Aerts, Gökhan Ertaylan, and Jef Hooyberghs</i></p>  |
|  | <p>A Mental Workload Estimation for Visualization Evaluation Using EEG Data and NASA-TLX<br/> <i>Soobin Yim, ChanYoung Yoon, Sangbong Yoo, and Yun Jang</i></p>  |
|  | <p>Validating Perception of Hyperspectral Textures in Virtual Reality Systems<br/> <i>Francisco Díaz-Barrancas, Halina Cwierz, Raquel Gil Rodríguez, and Pedro J. Pardo</i></p>  |
|  | <p>Situated Visualization in Motion for Video games<br/> <i>Federica Bucchieri, Lijie Yao, and Petra Isenberg</i></p>  |
|  | <p>Using Data Comics to Enhance Visualization Literacy<br/> <i>Magdalena Boucher, Christina Stoiber, and Wolfgang Aigner</i></p>   |
|  | <p>Accurate molecular atom selection in VR<br/> <i>Elena Molina Lopez and Pere-Pau Vázquez</i></p>   |

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|  | <p>Context Specific Visualizations on Smartwatches<br/><i>Alaul Islam, Tanja Blascheck, and Petra Isenberg</i></p>   |
|  | <p>Visual Exploration of Preference-based Routes in Ski Resorts<br/><i>Julius Rauscher, Matthias Miller, and Daniel Keim</i></p>   |
|  | <p>Visualizing Prediction Provenance in Regression Random Forests<br/><i>Nicolas Medoc, Vasile CIORNA, Frank PETRY, and Mohammad Ghoniem</i></p>   |
|  | <p>Toward an Interaction-Driven Framework for Modeling Big Data Visualization Systems<br/><i>Dario Benvenuti, Giovanni Fiordeponi, Hao Cheng, Tiziana Catarci, Jean-Daniel Fekete, Giuseppe Santucci, Marco Angelini, and Leilani Battle</i></p> |
|  | <p>ANARI: ANALytic Rendering Interface<br/><i>Kevin Griffin, Jefferson Amstutz, Dave DeMarle DeMarle, Johannes Günther, Jakob Progsch, William Sherman, John Stone, Will Usher, and Kees Van Kooten</i></p>                                      |
|  | <p>PSEUDO: Interactive Pattern Search in Multivariate Time Series with Locality-Sensitive Hashing and Relevance Feedback<br/><i>Yuncong Yu, Dylan Kruffy, Jiao Jiao, Tim Becker, and Michael Behrisch</i></p>                                    |
|  | <p>Exploration and Analysis of Image based Simulation Ensembles<br/><i>Mai Dahshan, Terece Turton, and Nicholas Polys</i></p>  |
|  | <p>Visualizing Similarities between American Rap-Artists<br/><i>Christofer Meinecke, Jeremias Schebera, Jakob Eschrich, and Daniel Wiegrefe</i></p>  |
|  | <p>Interactive Attribution-based Explanations for Image Segmentation<br/><i>Christina Humer, Mohamed Elharty, Andreas Hinterreiter, and Marc Streit</i></p>  |
|  | <p>VisualBib(va): A Visual Analytics Platform for Authoring and Reviewing Bibliographies<br/><i>Antonina Dattolo, Marco Corbatto, and Marco Angelini</i></p>   |

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|  | <p>Visualization Challenges of Variant Interpretation in Multiscale NGS Data<br/><i>Emilia Ståhlbom, Jesper Molin, Claes Lundström, and Anders Ynnerman</i></p>     |
|  | <p>Sustainable Urban Wastewater Treatment Visualizations<br/><i>Juan Marin Vega, Nerea Uri Carreno, Jakob Kusnick, and Stefan Jänicke</i></p>                       |
|  | <p>A case study on implementing screen reader accessibility in dynamic visualizations<br/><i>Rita Costa, Beatriz Malveiro, João Palmeiro, and Pedro Bizarro</i></p> |
|  | <p>On Visualizing Music Storage Media for Modern Access to Historic Sources<br/><i>Richard Khulusi and Heike Fricke</i></p>   |
|  | <p>Enhancing Evaluation of Room Scale VR Studies to POI visualizations in Minimaps<br/><i>Batoul Ajdadilish, Steffi Kohl, and Kay Schröder</i></p>                  |
|  | <p>Chord2DS: An Extension to Chord Diagram to Show Data Elements from Two Heterogeneous Data Sources<br/><i>Shah Rukh Humayoun and Likhitha Brahmadevara</i></p>    |
|  | <p>Parameter Sensitivity and Uncertainty Visualization in DTI<br/><i>Faizan Siddiqui, Thomas Höllt, and Anna Vilanova</i></p>                                       |

## // WEDNESDAY, 15 JUNE, 2022

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| 8:00-9:00   | Registration  |
| 9:00-10:40  | <b>FP 4 : Workflows and Parameters</b><br><b>Chair: Alvitta Ottley</b><br><b>Aula Magna Room</b>  |
| 9:00-9:25   | Reusing Interactive Analysis Workflows<br><i>Kiran Gadhave, Zach Cutler, and Alexander Lex</i>  |
| 9:25-9:50   | Leveraging Analysis History for Improved In Situ Visualization Recommendation<br><i>Will Epperson, Doris Jung-Lin Lee, Leijie Wang, Kunal Agarwal, Aditya Parameswaran, Dominik Moritz, and Adam Perer</i>    |
| 9:50-10:15  | Visual Parameter Selection for Spatial Blind Source Separation<br><i>Nikolaus Piccolotto, Markus Bögl, Christoph Muehlmann, Klaus Nordhausen, Peter Filzmoser, and Silvia Miksch</i>                          |
| 10:15-10:40 | HyperNP: Interactive Visual Exploration of Multidimensional Projection Hyperparameters<br><i>Gabriel Appleby, Mateus Espadoto, Rui Chen, Samuel Goree, Alexandru Telea, Erik Anderson, and Remco Chang</i>    |
| 9:00-10:40  | <b>FP 5 : Life Sciences and Urbanism</b><br><b>Chair: Rosane Minghim</b><br><b>Aula Minor Room</b>  |
| 9:00-9:25   | Barrio: Customizable Spatial Neighborhood Analysis and Comparison for Nanoscale Brain Structures<br><i>Jakob Troidl, Corrado Cali', Eduard Gröller, Hanspeter Pfister, Markus Hadwiger, and Johanna Beyer</i> |
| 9:25-9:50   | LineageD: An Interactive Visual System for Plant Cell Lineage Assignments based on Correctable Machine Learning<br><i>Jiayi Hong, Alain Trubuil, and Tobias Isenberg</i>                                      |

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| 9:50-10:15  | Urban Rhapsody: Large-scale Visual Exploration of Urban Soundscapes<br><i>João Rulff, Fabio Miranda, Maryam Hosseini, Marcos Lage, Mark Cartwright, Graham Dove, Juan Pablo Bello, and Claudio Silva</i> |
| 10:15-10:40 | AirLens: Multi-Level Visual Exploration of Air Quality Evolution in Urban Agglomerations<br><i>Dezhan Qu, Cheng Lv, Yiming Lin, Huijie Zhang, and Rong Wang</i>  |

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| <b>10:40-11:10</b> | <b>Coffee Break</b> |
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| <b>11:10-12:50</b> | <b>FP 6 : High Dimensional Data</b><br><b>Chair: Renata Raidou</b><br><b>Aula Magna Room</b>   |
| 11:10-11:35        | Where did my Lines go? Visualizing Missing Data in Parallel Coordinates<br><i>Alex Bäuerle, Christian van Onzenoodt, Simon der Kinderen, Jimmy Johansson Westberg, Daniel Jönsson, and Timo Ropinski</i>   |
| 11:35-12:00        | Optimizing Grid Layouts for Level-of-Detail Exploration of Large Data Collections<br><i>Steffen Frey</i>   |
| 12:00-12:25        | Six methods for transforming layered hypergraphs to apply layered graph layout algorithms<br><i>Sara Di Bartolomeo, Alexis Pister, Paolo Buono, Catherine Plaisant, Cody Dunne, and Jean-Daniel Fekete</i> |
| 12:25-12:50        | Exploring Multivariate Event Sequences with an Interactive Similarity Builder<br><i>Shaobin Xu, Minghui Sun, Zhengtai Zhang, and Hao Xue</i>   |

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| 11:10-12:50 | <b>FP 7 : Text and Music</b><br><b>Chair: Vidya Setlur</b><br><b>Aula Minor Room</b>  |
| 11:10-11:35 | [J] Augmenting Digital Sheet Music through Visual Analytics<br><i>Matthias Miller, Daniel Fürst, Hanna Hauptmann, Daniel A. Keim, and Mennatallah El-Assady</i>   |
| 11:35-12:00 | CorpusVis: Visual Analysis of Digital Sheet Music Collections<br><i>Matthias Miller, Julius Rauscher, Daniel Keim, and Mennatallah El-Assady</i>  |
| 12:00-12:25 | [J] Explaining Semi-Supervised Text Alignment through Visualization<br><i>Christofer Meinecke, David Wrisley, and Stefan Janicke</i>  |
| 12:25-12:50 | LMFingerprints: Visual Explanations of Language Model Embedding Spaces through Layerwise Contextualization Scores<br><i>Rita Sevastjanova, Aikaterini-Lida Kalouli, Christin Beck, Hanna Hauptmann, and Mennatallah El-Assady</i> |
| 12:40-14:20 | <b>Lunch</b>  |
| 14:20-16:00 | <b>FP 8 : Engineering, Physics, and Math</b><br><b>Chair: Christoph Garth</b><br><b>Aula Magna Room</b>   |
| 14:20-14:45 | Streaming Approach to In Situ Selection of Key Time Steps for Time-Varying Volume Data<br><i>Mengxi Wu, Yi-Jen Chiang, and Christopher Musco</i>  |
| 14:45-15:10 | An Interactive Approach for Identifying Structure Definitions<br><i>Natalia Mikula, Tom Doerffel, Daniel Baum, and Hans-Christian Hege</i>  |
| 15:10-15:35 | Level of Detail Exploration of Electronic Transition Ensembles using Hierarchical Clustering<br><i>Signe Sidwall Thygesen, Talha Bin Masood, Mathieu Linares, Vijay Natarajan, and Ingrid Hotz</i>                                |

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| 15:35-16:00        | A Flip-book of Knot Diagrams for Visualizing Surfaces in 4-Space<br><i>Huan Liu and Hui Zhang</i>  |
| <b>14:20-16:00</b> | <b>STAR 2 : A Journey Through Multiple Scales</b><br><b>Chair: Michael Krone</b><br><b>Aula Minor Room</b>   |
| 14:20-15:10        | A Survey of Visualization and Analysis in High-Resolution Connectomics<br><i>Johanna Beyer, Jakob Troidl, Saeed Boorboor, Markus Hadwiger, Arie Kaufman, and Hanspeter Pfister</i> |
| 15:10-16:00        | Trends & Opportunities in Visualization for Physiology: A Multiscale Overview<br><i>Laura Garrison, Ivan Kolesar, Ivan Viola, Helwig Hauser, and Stefan Bruckner</i>               |
| <b>16:00-16:30</b> | <b>Coffee Break</b>  |
| <b>16:30-18:10</b> | <b>FP 9 : Algorithms and Machine Learning</b><br><b>Chair: Johanna Beyer</b><br><b>Aula Magna Room</b>   |
| 16:30-16:55        | LOOPS: Locally Optimized Polygon Simplification<br><i>Alireza Amiraghdam, Alexandra Diehl, and Renato Pajarola</i>   |
| 16:55-17:20        | Branch Decomposition-Independent Edit Distances for Merge Trees<br><i>Florian Wetzels, Heike Leitte, and Christoph Garth</i>   |
| 17:20-17:45        | SimilarityNet: A Deep Neural Network for Similarity Analysis Within Spatio-temporal Ensembles<br><i>Karim Huesmann and Lars Linsen</i>   |
| 17:45-18:00        | Neural Flow Map Reconstruction<br><i>Saroj Sahoo, Yuzhe Lu, and Matthew Berger</i>   |

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| <p>16:30-17:20</p>  | <p><b>IND 1 : Industrial Keynote from Intel</b><br/> <b>Chair: Giuseppe Santucci</b><br/> <b>Aula Minor Room</b></p>   |
| <p>16:30-17:20</p>   | <p>State Of The Art: Intel® Advanced Ray Tracing (Intel® ART)<br/> <i>Jim Jeffers</i></p>  |
| <p>19:30</p>   | <p><b>Leipzig Party</b><br/> <b>Mediterrano-Ristorante e Giardino</b></p>  |
|  | <p>Restaurant of MAXII Museum of Rome<br/> <a href="https://www.maxxi.art/en/mediterraneo-ristorante-e-giardino/">https://www.maxxi.art/en/mediterraneo-ristorante-e-giardino/</a><br/> <i>Via Guido Reni 4 A Roma</i></p> |

## // THURSDAY, 16 JUNE, 2022

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| 8:00-9:00   | Registration   |
| 9:00-10:40  | <b>FP 10 : Social Sciences, Mobile, and VR/AR</b><br><b>Chair: Johanna Schmidt</b><br><b>Aula Magna Room</b>   |
| 9:00-9:25   | Hybrid Touch/Tangible Spatial Selection in Augmented Reality<br><i>Mickael SERENO, Stéphane Gosset, Lonni Besançon, and Tobias Isenberg</i>  |
| 9:25-9:50   | [J] Design and Evaluation of Visualisation Techniques to Facilitate Argument Exploration<br><i>D. Khartabil, C. Collins, S. Wells, B. Bach, and J. Kennedy</i>   |
| 9:50-10:15  | Mobile and Multimodal? A Comparative Evaluation of Interactive Workplaces for Visual Data Exploration<br><i>Gabriela Molina León, Michael Lischka, Luo Wei, and Andreas Breiter</i>                            |
| 10:15-10:40 | DanmuVis: Visualizing Danmu Content Dynamics and Associated Viewer Behaviors in Online Videos<br><i>Shuai Chen, Sihang Li, Yanda Li, Junlin Zhu, Juanjuan Long, Siming Chen, Jiawan Zhang, and Xiaoru Yuan</i> |
| 9:00-10:40  | <b>FP 11 : Empirical Studies</b><br><b>Chair: Bum Chul Kwon</b><br><b>Aula Minor Room</b>  |
| 9:00-9:25   | Exploring How Visualization Design and Situatedness Evoke Compassion in the Wild<br><i>Luiz Morais, Nazareno Andrade, and Dandara Sousa</i>  |
| 9:25-9:50   | [J] Design and Evaluation Study of Visual Analytics Decision Support Tools in Air Traffic Control<br><i>Elmira Zohrevandi, Carl Westin, Jonas Lundberg, and Anders Ynnerman</i>                                |

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| 9:50-10:15  | [J] Evaluating Data-type Heterogeneity in Interactive Visual Analyses with Parallel Axes<br><i>José Matute and Lars Linsen</i>   |
| 10:15-10:40 | Exploring Effects of Ecological Visual Analytics Interfaces on Experts' and Novices' Decision-Making Processes: A Case Study in Air Traffic Control<br><i>Elmira Zohrevandi, Carl A. L. Westin, Katerina Vrotsou, and Jonas Lundberg</i> |

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| <b>10:40-11:10</b> | <b>Coffee Break</b> |
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| <b>11:10-12:50</b> | <b>FP 12 : Models and Frameworks</b><br><b>Chair: Barbora Kozlikova</b><br><b>Aula Magna Room</b>   |
| 11:10-11:35        | A Typology of Guidance Tasks in Mixed-Initiative Visual Analytics Environments<br><i>Ignacio Pérez-Messina, Davide Ceneda, Mennatallah El-Assady, Silvia Miksch, and Fabian Sperrle</i> |
| 11:35-12:00        | VIBE: A Design Space for Visual Belief Elicitation in Data Journalism<br><i>Shambhavi Mahajan, Yea-Seul Kim, Alireza Karduni, Bonnie Chen, and Emily Wall</i>                           |
| 12:00-12:25        | A Grammar-Based Approach for Applying Visualization Taxonomies to Interaction Logs<br><i>Sneha Gathani, Shayan Monadjemi, Alvitta Ottley, and Leilani Battle</i>                        |
| 12:25-12:50        | A Process Model for Dashboard Onboarding<br><i>Vaishali Dhanoa, Conny Walchshofer, Andreas Hinterreiter, Holger Stitz, Eduard Gröller, and Marc Streit</i>                              |

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| <b>11:10-12:50</b> | <b>FP 13 : General Public</b><br><b>Chair: Narges Mahyar</b><br><b>Aula Minor Room</b>   |
| 11:10-11:35        | Misinformed by Visualization: What Do We Learn From Misinformative Visualizations?<br><i>Leo Yu-Ho Lo, Ayush Gupta, Kento Shigyo, Aoyu Wu, Enrico Bertini, and Huamin Qu</i> |
| 11:35-12:00        | Investigating the Role and Interplay of Narrations and Animations in Data Videos<br><i>Hao Cheng, Junhong Wang, Yun Wang, Bongshin Lee, Haidong Zhang, and Dongmei Zhang</i> |
| 12:00-12:25        | Nested Papercrafts for Anatomical and Biological Edutainment<br><i>Marwin Schindler, Thorsten Korpitsch, Renata Georgia Raidou, and Hsiang-Yun Wu</i>                        |

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| <b>12:40-14:20</b> | <b>Lunch</b> |
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| <b>14:20-16:00</b> | <b>STAR 3 : Health and Medicine</b><br><b>Chair: Anna Vilanova</b><br><b>Aula Magna Room</b>   |
| 14:20-15:10        | Vessel Maps: A Survey of Map-Like Visualizations of the Cardiovascular System<br><i>Pepe Eulzer, Monique Meuschke, Gabriel Mistelbauer, and Kai Lawonn</i> |
| 15:10-16:00        | EHR STAR: The State-Of-the-Art in Interactive EHR Visualization<br><i>Qiru Wang and Robert S. Laramée</i>  |

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| <b>14:20-16:00</b> | <b>SP 2 : Graphs &amp; Trees</b><br><b>Chair: Barbora Kozlikova</b><br><b>Aula Minor Room</b>  |
| 14:20-14:40        | The Effect of Graph Layout on the Perception of Graph Density: An Empirical Study<br><i>Elektra Kypridemou, Michele Zito, and Marco Bertamini</i>                                    |
| 14.40-15:00        | Metaphoric maps for dynamic vertex-weighted graphs<br><i>Tamara Mchedlidze and Christian Schorr</i>  |
| 15:00-15:20        | Augmented Intelligence with Interactive Voronoi Treemap for Scalable Grouping: a Usage Scenario with Wearable Data<br><i>Ala Abuthawabeh, Abdelkader Baggag, and Michael Aupetit</i> |
| 15:20-15:40        | DNC: Dynamic Neighborhood Change Faithfulness Metrics<br><i>Shijun Cai, Amyra Meidiana, and Seok-Hee Hong</i>  |
| 15:40-16:00        | DSS: Drawing Dynamic Graphs with Spectral Sparsification<br><i>Amyra Meidiana, Seok-Hee Hong, Yanyi Pu, Justin Lee, Peter Eades, and Jinwook Seo</i>                                 |

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| <b>16:00-16:30</b> | <b>Coffee Break</b> |
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| <b>16:30-18:10</b> | <b>SP 3 : Visual Analysis &amp; ML</b><br><b>Chair: Paolo Buono</b><br><b>Aula Magna Room</b>   |
| 16:30-16:50        | Blocks: Creating Rich Tables with Drag-and-Drop Interaction<br><i>Allison Whilden, Dirk Karis, Vidya Setlur, Rodion Degtyar, Jonathan Que, and Filippos Lymperopoulos</i>           |
| 16:50-17:10        | Towards Multimodal Exploratory Data Analysis: SoniScope as a Prototypical Implementation<br><i>Kajetan Enge, Alexander Rind, Michael Iber, Robert Höldrich, and Wolfgang Aigner</i> |

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| 17:10-17:30 | GroupSet: A Set-Based Technique to Explore Time-Varying Data<br><i>Liqun Liu and Romain Vuillemot</i>   |
| 17:30-17:50 | Data+Shift: Supporting visual investigation of data distribution shifts by data scientists<br><i>João Palmeiro, Beatriz Malveiro, Rita Costa, David Polido, Ricardo Moreira, and Pedro Bizarro</i>      |
| 17:50-18:10 | Explaining Black Box with visual exploration of Latent Space<br><i>Francesco Bodria, Salvatore Rinzivillo, Daniele Fadda, Riccardo Guidotti, Fosca Giannotti, and Dino Pedreschi</i>                    |
| 18:10-18:30 | DASH: Visual Analytics for Debiasing Image Classification via User-Driven Synthetic Data Augmentation<br><i>Bum Chul Kwon, Jungsoo Lee, Chaeyeon Chung, Nyoungwoo Lee, Ho-Jin Choi, and Jaegul Choo</i> |

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| <b>16:30-18:10</b> | <b>SP 4 : Applications</b><br><b>Chair: Michael Krone</b><br><b>Aula Minor Room</b>  |
| 16:30-16:50        | A Design Study of Visualizing Historical Book Movement<br><i>Yiwen Xing, Cristina Dondi, Rita Borgo, and Alfie Abdul-Rahman</i>  |
| 16:50-17:10        | Visual Evaluation of Translation Alignment Data<br><i>Tariq Yousef and Stefan Jänicke</i>  |
| 17:10-17:30        | Visualization of Tonal Harmony for Jazz Lead Sheets<br><i>Carey Bunks, Tillman Weyde, Aidan Slingsby, and Jo Wood</i>  |
| 17:30-17:50        | CellTrackVis: analyzing the performance of cell tracking algorithms<br><i>Weimin Li, Xiang Zhang, Alan Stern, Marc R. Birtwistle, and Federico Iuricich</i>                                  |
| 17:50-18:10        | Application-oriented analysis of material interface reconstruction algorithms in time-varying bijel simulations<br><i>Xueyi Bao, Nikhil Karthikeyan, Ulf Schiller, and Federico Iuricich</i> |

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| 20:00 | <b>Gala Dinner</b><br><b>Domus Circo Massimo</b>      |
|       | Domus Circo Massimo<br><i>Via dei Cerchi 89, Roma</i> |

## // FRIDAY, 17 JUNE, 2022

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| 10:00-10:40 | Coffee Break   |
| 10:40-12:50 | <b>Capstone, Awards and Closing</b><br><b>Chair: Giuseppe Santucci</b><br><b>Aula Magna Room</b>   |
| 10:40-10:45 | Introduction   |
| 10:45-11:35 | <b>Data visualization and the ripples that last</b><br><i>Angela Morelli</i><br><i>A participatory approach is the foundation for building design solutions that empower citizens, policymakers, experts and non-experts to make informed decisions. Angela will guide us through the journey of co-designing data visualizations that present information in effective ways in order to capture the imagination of an audience.</i> |
| 11:35-12:50 | Awards and Closing   |

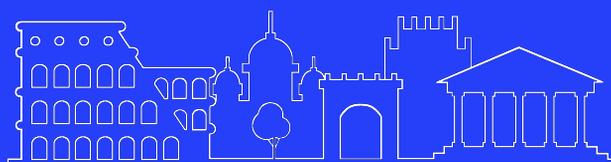








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