RESEARCH GROUP

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Visualization & Interaction

The VISU Group undertakes applied research in computer science with a focus on Interactive 2D/3D Visualization as well as Augmented and Virtual Reality. The overall objective is to benefit from these technologies to explore and gain insights in complex datasets, to solve complex problems, to maintain situational awareness in various contexts, and ultimately to support humans to make informed decisions.
We carry out research activities at the interplay of Information Visualization, Visual Analytics, Human-Computer Interaction, Multimodal Interactions, Augmented, Mixed and Virtual Reality.

Application fields

- Visualization of high dimensional, mixed-type data
- Graph and Network visualization
- Visual Text analytics and Visual exploration of large document collections
- Visualization for Explainable Artificial Intelligence
- Situational Awareness
- Collaborative and Immersive Visualization
- Augmented Reality for Training in critical situations
- Scenario creation methods and tools for Augmented Reality
- Automotive User Interfaces
- Behaviour Analytics to enrich (visual) interactive systems

Research challenges

- How to visualize large, complex, heterogeneous, multi-variate datasets?
- How to use analytics and AI approaches to support interactive visualization?
- How to use visualization techniques to explain the behaviour of AI models and help the interpretation of their results?
- How to use Augmented Reality to raise awareness of invisible risks (for example radiation)?
- How to support new forms of interaction in highly automated vehicles?
- How to design interactive visualizations for wall-sized high-resolution display environments?

Application areas

- Industry 4.0
- Automotive
- Health Techs
- Education Technologies
- Security & Defence

Main assets

- Papyrus for Text Visualization
- Ariane for Network Visualization
- LAMDA for High-Dimensional Visualization
- Starri Augmented Reality Training Platform
- TERRIFFIC Augmented Reality system for Radiological Incident Management
- Automated Vehicle Simulation Software

Equipment

- Augmented and Virtual Reality Laboratory
- Vehicle Simulator
- Visualization wall

Partners

LABRI, University of Bordeaux (FR) , University of Paris (FR) , University of Lorraine (FR) , University of Louvain (BE) , University of Manchester (UK), , University of Salzburg (AT) , University of Swansea (UK) , TU Wien (AT) , Goodyear , CEA Tech (FR) , ARKTIS Radation Detectors (CH) , Bruhn Newtech (DK) , Nexter (FR) , Ecole Central Lyon (FR)

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