

## 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
- TERRIFIC Augmented Reality system for Radiological Incident Management
- Automated Vehicle Simulation Software

### Equipment

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

### Key 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 Radiation Detectors](#) (CH)
- [Bruhn Newtech](#) (DK)
- [Nexter](#) (FR)
- [Ecole Central Lyon](#) (FR)

### Partenaires

ADICONSUM (IT), Aristotle University Thessaloniki (GR), ARTTIC (FR), City of Arnhem (NL), City of Esch/Alzette (LU), City of Nottingham (UK), City of Rotterdam (NL), Deutsches Institut für Normung E.V., E.ON (HU), Ecole Nationale Supérieure de la Police (FR), Enovos Foundation (LU), European Institute for Innovation (DE), European Space Agency, Fraunhofer (DE), International Security Competence Centre (AT), Institut de Seguretat pública de Catalunya (ES), KU Leuven (BE), German Police University (DE), Goodyear (LU), LCSB (LU), NASA Frontier Development Lab (US), National Technical University of Athens (GR), Potsdam Institute for Climate Impact Research (DE), Public Health England (UK), Regulatory Authority for Energy (GR), SAP (DE), Space4Environment (LU), Stockholm University (SE), Technisches Hilfswerk (DE), Transport for London (UK), University of Bordeaux (FR), University of Florence (IT), University of Luxembourg (LU), University of Lorraine (FR), University of Louvain (BE), University of Manchester (UK), University of Salzburg (AT), University of Swansea (UK), University of Trás-os-Montes and Alto Douro (PT), University of Wageningen (NL), VITO (BE).

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