SFB-TRR 161

Quantitative Methods for Visual Computing
Transregional Collaborative Research Center

1st International Conference on

QUANTIFICATION IN VISUAL COMPUTING

OCTOBER 8 – 9, 2018

Stuttgart, Germany

co-located with **GCPR / VMV 2018**

Universität Stuttgart

Universität Konstanz

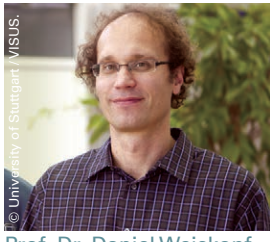
ulm university universität ulm

Funded by DFG

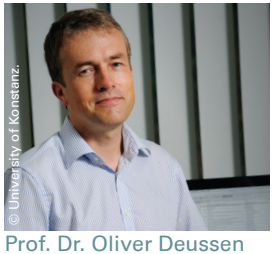
INDEX

WELCOME TO THE CONFERENCE

Dear attendees,



Prof. Dr. Daniel Weiskopf



Prof. Dr. Oliver Deussen

Welcome to the 1st International Conference on Quantification in Visual Computing! In our scientific communities, we have been witnessing a dramatic growth in research of the various fields of visual computing, ranging from computer graphics, visualization, computer vision, image processing all the way to human-computer interaction. At the same time, there has been an increasing trend to cross between these fields of visual computing, e.g., methods from computer vision and computer graphics are linked for advanced modeling and generating image and video content; and approaches from human-computer interaction and visualization are combined to facilitate visual analytics.

This conference brings together researchers from all disciplines of visual computing to foster further links and exchange of ideas. Our particular focus is on quantification, which plays a major role in evaluating and validating visual computing methods. Therefore, it is a critical part of research in our maturing field.

The topic of quantification is also covered by the DFG-funded Transregional Collaborative Research Center (SFB / Transregio) 161 (Quantitative Methods for Visual Computing), which is hosting this conference.

We wish you a very successful meeting. Enjoy your time in Stuttgart!

Prof. Dr. Daniel Weiskopf
Spokesperson
SFB / Transregio 161

Prof. Dr. Oliver Deussen
Vice Spokesperson
SFB / Transregio 161

LOCATION OF THE CONFERENCE

The coference will take place in the lecture halls of the Computer Science Building (Informatik-Gebäude) of the University of Stuttgart, which is located on the campus Stuttgart-Vaihingen.

The distances between the lecture halls of the conference, the cafeteria (“Mensa”), and the conference hotel Campus.Guest are short. Use this site plan for your orientation.

COMPUTER SCIENCE BUILDING

Universitätsstraße 38, Ground Floor

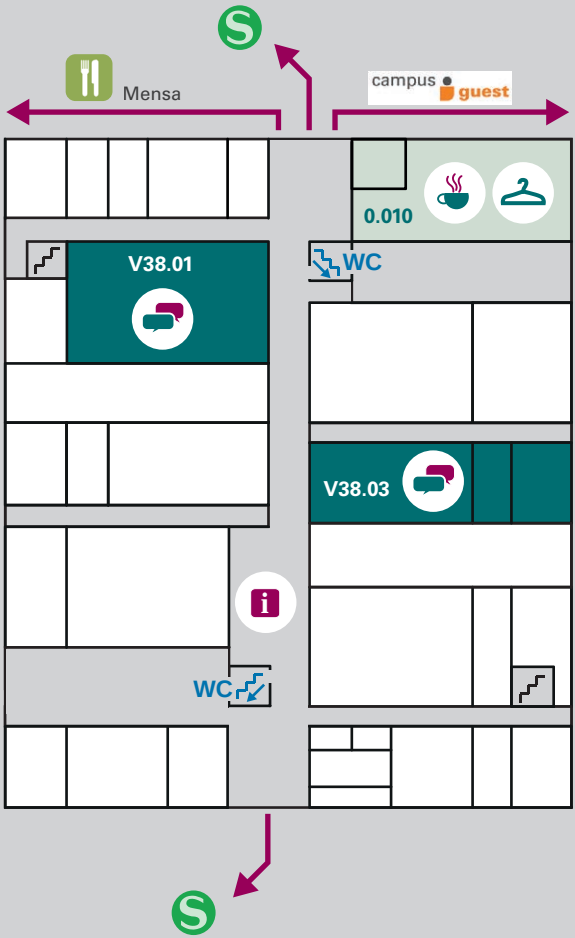
INFORMATION & REGISTRATION DESK

TALKS & POSTERS

COFFEE

WARDROBE

LUNCH



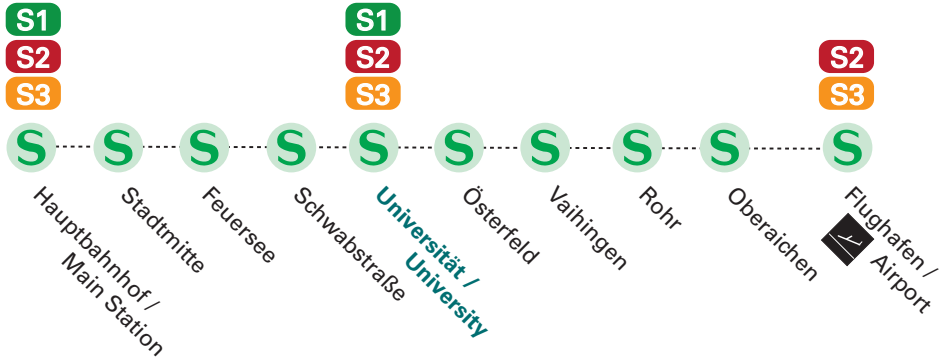
ARRIVING

BY PLANE

If you arrive at Stuttgart Airport, take the urban railway (S-Bahn) **S2** (direction Schorndorf) or **S3** (direction Backnang) to station "University" (approx. 15 minutes).

BY TRAIN

If you arrive at Stuttgart Main Station (Hauptbahnhof) by train, take the urban railway (S-Bahn) **S1** (direction Herrenberg), **S2** (direction Filderstadt) or **S3** (direction Airport) to station "University" (approx. 15 minutes).



Leave the station at the exit "Universitätszentrum". The Computer Science Building (Informatik-Gebäude) is located between the two exits of the urban railway (S-Bahn) station.

PLEASE NOTE!

Please check your long distance rail ticket. If it shows the option "+City", the local transport is included.

Public Transport in Stuttgart

Schedule information for public transport in Stuttgart is available online on www.en.vvs.de or via VVS App (www.vvs.de/vvs-app).

BY CAR

Visitors traveling by car can use the city map on page 2 to find the way to the conference location and the available parking spaces. There are further parking spaces sidewise the streets Allmandring and Pfaffenwaldring.

Due to many construction sites, only a **limited number of parking spaces is available**. We recommend to use public transport.

ACCOMMODATION

CAMPUS.GUEST

The conference hotel Campus.Guest of the University of Stuttgart is centrally located on the campus Stuttgart-Vaihingen, in a quiet but also conveniently situated location. You can reach the S-Bahn station "Universität" in a few minutes by foot. The autobahn and the airport are reachable with a short drive by car.

The hotel offers more than 200 rooms, apartments in various sizes, suites, and rooms with a kitchen. All rooms have private bathrooms.

From a breakfast buffet to drinks and snacks for breaks, a lunch-buffet with starters, main dish and dessert, or a quiet evening in the bistro, you will never go hungry or thirsty.

Campus.Guest is centrally located on the campus Stuttgart-Vahingen.

campus guest

Universitätsstraße 34
70569 Stuttgart
Phone: 0711/ 97464-0
reservierung@campus-guest.de
www.campus-guest.de

BOOKING

The organization committee arranged a pre-booked option for participants of our conference in the hotel Campus.Guest. When booking the accommodation in this hotel by phone or by mail, please use the keyword "SFB TRR 161", which will ensure you the discount we agreed with them:

Single room – 79 EUR
Double room – 98 EUR

Prices are indicated per room and night including breakfast.

PLEASE NOTE! Please try to book the accommodation as soon as possible as the discounted prices are only available until August 31, 2018.

USEFUL INFORMATION

TICKETS AND PUBLIC TRANSPORT

Our conference is located at the University of Stuttgart, campus Stuttgart-Vaihingen. For the conference dinner as well as individual trips to the city of Stuttgart, you can ride all streetcars, suburban railways, and busses within the metropolitan Stuttgart area.

Free Tickets for Public Transport

All visitors of our conference receive a weekly ticket ("Wochenticket") for free to be used within the whole city area. This ticket is valid from Monday to Friday.

Please pick up your ticket at the registration desk!

A map of the railway network is available at the registration desk.

Schedule information for public transport in Stuttgart is available online on www.en.vvs.de or via VVS App (www.vvs.de/vvs-app).

INTERNET ACCESS

Wireless Internet is available for all conference participants. Logins and passwords will be given at the registration desk.

Eduroam can also be used.

LUNCH

All visitors will get lunch at the cafeteria ("Mensa"). Please pick up a free voucher at the registration desk!

PHOTO AND VIDEO RECORDINGS

Please note! During the event, we will produce photos, video, and audio recordings for public relation purposes. Due to German law, we need your written consent for the usage of the photo, video, and audio recordings. For this purpose, we will ask you for your signature during the registration process at the registration desk. If you do not agree with being recorded, we ask you to wear this orange button as a sign for our photo and video staff. The button is available at the registration desk.

TWITTER / #QiVC2018

Follow us on twitter.com/sfbtrr161 to receive relevant information during the conference time. Please use the hashtag #QiVC2018 for your social media activities.

PROGRAM – AT A GLANCE

MONDAY, OCTOBER 8, 2018

Registration opens at 11:30 am

1:30 – 2:00 pm	**OPENING** **Daniel Weiskopf and Oliver Deussen**	V38.01
2:00 – 3:00 pm	**KEYNOTE** **Wendy E. Mackay** Creating Human-Computer Partnerships	V38.01
3:00 – 3:30 pm	**SFB/TRANSREGIO 161 TALK** **Harald Reiterer** Human-Computer Interaction	V38.01
3:30 – 4:00 pm	Coffee Break	0.010
4:00 – 5:00 pm	**KEYNOTE** **Markus Gross** Technology to Create the Magic	V38.01
5:00 – 5:30 pm	**SFB/TRANSREGIO 161 TALK** **Dieter Fritsch** Photogrammetry	V38.01
7:00 – 10:00 pm	**CONFERENCE DINNER** **SCHLACHTHOF**	

TUESDAY, OCTOBER 9, 2018

Registration opens at 8:30 am

9:00 – 10:00 am	**KEYNOTE** **Weisi Lin** How to Make Machines Analyse, Visualize and Interact as Humans	V38.01
10:00 – 11:30 am	**COFFEE BREAK &** **POSTER SESSION**	V38.03

PROGRAM – AT A GLANCE

11:30 am – 12:30 pm	**KEYNOTE** **Joachim Weickert** Inpainting-Based Compression of Visual Data	V38.01
12:30 – 1:30 pm	Lunch	Mensa
1:30 – 2:00 pm	**SFB/TRANSREGIO 161 TALK** **Daniel Keim** Visualization	V38.01
2:00 – 3:00 pm	**KEYNOTE** **Tamara Munzner** Characterization of Information Visualization Systems	V38.01
3:00 – 3:30 pm	Coffee Break	0.010
3:30 – 4:00 pm	**SFB/TRANSREGIO 161 TALK** **Lewis Chuang** Perception	V38.01
4:00 – 4:30 pm	**SFB/TRANSREGIO 161 TALK** **Melanie Herschel** Applications	V38.01
4:30 – 5:00 pm	Coffee Break	0.010
5:00 – 6:00 pm	**KEYNOTE** **Michael Cohen** Still, In Motion	V38.01
6:30 – 9:00 pm	**RECEPTION OF THE SFB/TRANSREGIO 161 & VMV/GCPR 2018 CONFERENCES**	Campus. Guest

KEYNOTE SPEAKERS

MICHAEL COHEN

https://research.fb.com/people/cohen-michael/

Still, In Motion

In this talk, I will take an autobiographical approach to explain both where we have come from in computer graphics from the early days of rendering, and to point towards where we are going in this new world of smartphones and social media. We are at a point in history where the abilities to express oneself with media is unparalleled. The ubiquity and power of mobile devices coupled with new algorithmic paradigms is opening new expressive possibilities weekly. At the same time, these new creative media (composite imagery, augmented imagery, short form video, 3D photos) also offer unprecedented abilities to move freely between what is real and unreal. I will focus on the spaces in between images and video, and in between objective and subjective reality. Finally, I will close with some lessons learned along the way.

Short Bio: Michael Cohen is the Director of Facebook's Computational Photography group, building new ways to share photos and videos on the social media platform and to experience new AR and VR media. He also serves as an Affiliate Professor at the University of Washington. Michael joined Facebook in 2015 after 21 years at Microsoft Research. Previously, he served on the faculties at Princeton and Cornell Universities.

Michael holds a PhD in Computer Science from the University of Utah, and an MS in Architecture from Cornell. He also completed undergraduate degrees in Civil Engineering (Rutgers University) and Art (Beloit College). Michael's early work in Radiosity for Image Synthesis led to a book and eventually to his receiving the SIGGRAPH Achievement Award in 1998. Since then, he has worked primarily at the intersection of Computer Graphics and Computer Vision on topics related to Computational Photography. He was inducted as an ACM Fellow in 2007.

MARKUS GROSS

https://graphics.ethz.ch/people/grossm/home.php

Technology to Create the Magic

Disney Research's mission is to drive value for The Walt Disney Company by delivering scientific & technological innovation. Our world-class research talent invents and transfers the most compelling technologies enabling the company to differentiate its content, services, and products. Our worldclass research teams in Zurich focus onto variety of research applications including Visual Computing, Machine Intelligence, Robotics, Human Computer Interaction, and Digital Fabrication.

In this talk, I will give an overview of the Disney Research organization, explain how we transfer our innovations into products and shows. Examples include novel technologies for life action and animation features, storytelling in virtual and augmented reality, the design of novel robotic systems, and machine learning for language processing and analytics.

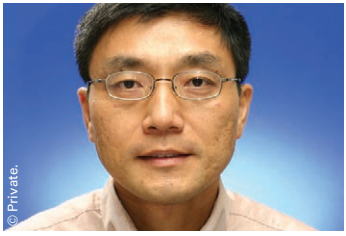
Short Bio: Markus Gross is a Professor of Computer Science at the Swiss Federal Institute of Technology Zurich (ETH), head of the Computer Graphics Laboratory, Vice President Global Research and Development and the director of Disney Research. He joined the ETH Computer Science faculty in 1994. His research interests include physically based modeling, computer animation, immersive displays, and video technology.

Before joining Disney, Gross was director of the Institute of Computational Sciences at ETH. He received a master of science in electrical and computer engineering and a PhD in computer graphics and image analysis, both from Saarland University in Germany in 1986 and 1989. He serves on the boards of numerous international research institutes, societies, and governmental organizations.

Markus Gross is a fellow of the ACM and of the EUROGRAPHICS Association and a member of the German Academy of Sciences Leopoldina as well as the Berlin-Brandenburg Academy of Sciences and Humanities. He cofounded Cyfex AG, Novodex AG, LiberoVision AG, Dybuster AG, Gimalon AG, Kapanu AG, Perceptiko AG, Propulsion Academy AG, Arbrea Labs AG and Nanocorp AG.

KEYNOTE SPEAKERS

WEISI LIN



http://www.ntu.edu.sg/home/wslin/

How to Make Machines Analyse, Visualize and Interact as Humans

There are many good reasons to make machines perceive as humans do: the goal of artificial intelligence (AI) aims to mimic human capabilities, such as learning and problem solving; most visual signals (be they naturally captured, computer-generated, or their combinations) we manipulate are for human consumption and uses; even for the cases in which machines do not need to emulate human functioning, there are technical advantages for emulation of human behavior due to its efficiency and effectiveness; there is an increasing need for harmonious human-machine interaction (in the near future we may have to deal with robots acting as colleagues, salespersons or care-givers).

So far, we have been able to build machines that perform significantly better and quicker than our body parts like arms and legs. However, when it comes to modeling human visual perception, the odyssey proves to be much more difficult. In this talk, the major related problems and research progress in perceptual signal processing will be introduced. The basic computational models (e.g., visual attention, just-noticeable difference, and perceptual signal quality metrics) will be discussed. Afterward, different perceptually-inspired visual signal processing techniques are to be presented for signal acquisition, enhancement, communication, retrieval/search, adaptation and understanding. The last part of the talk discusses future R&D possibilities, including those enabled by the emerging big visual data, cloud media, AI and VR/AR.

Short Bio: Weisi Lin is an active researcher in image processing, perception-based signal modelling and assessment, video compression, and multimedia communication systems. In the said areas, he has published 180+ international journal papers and 230+ international conference papers, 7 patents, 9 book chapters, 2 authored books and 3 edited books, as well as excellent track record in leading and delivering more than 10 major funded projects (with over S$7m research funding).

Weisi Lin earned his Ph.D from King's College, University of London. He had been the Lab Head, Visual Processing, Institute for Infocomm Research (I2R). He is a Professor in School of Computer Science and Engineering, Nanyang Technological University, where he served as the Associate Chair (Graduate Studies) in 2013-2014.

He is a Fellow of IEEE and IET, and an Honorary Fellow of Singapore Institute of Engineering Technologists. He has been elected as a Distinguished Lecturer in both IEEE Circuits and Systems Society (2016-17) and Asia-Pacific Signal and Information Processing Association (2012-13), and given keynote/invited/tutorial/panel talks to 20+ international conferences during the past 10 years.

WENDY E. MACKAY

© Private.

https://ex-situ.lri.fr/people/mackay/

Creating Human-Computer Partnerships

The classic approach to Artificial Intelligence treats the human being as a cog in the computer's process – the so-called "human-in-the-loop". By contrast, the classic approach to Human-Computer Interaction seeks to create a 'user experience' with the computer. We seek a third approach, a true human-computer partnership that takes advantage of machine learning, but leaves the user in control.

I describe how we can create interactive systems that are discoverable, appropriable and expressive, drawing from the principles of instrumental interaction and reciprocal co-adaptation. Our goal is to create robust interactive systems that grow with the user, with a focus on augmenting human capabilities.

Short Bio: Wendy Mackay is a Research Director, Classe Exceptionnelle, at Inria, France, where she heads the ExSitu (Extreme Situated Interaction) research group in Human-Computer Interaction at the Université Paris-Sud.

After receiving her Ph.D. from MIT, she managed research groups at Digital Equipment and Xerox EuroPARC, which were among the first to explore interactive video and tangible computing. She has been a visiting professor at University of Aarhus and Stanford University and served as Vice President for Research at the University of Paris-Sud.

Wendy is a member of the ACM CHI academy, is a past chair of ACM/SIGCHI, chaired CHI'13 and recently received the ACM/SIGCHI Lifetime Achievement Service Award and is Doctor Honoris Causa from the University of Aarhus. She also received an ERC Advanced Grant for her research on co-adaptive instruments and has published approximately 200 peer-reviewed research articles in the area of Human-Computer Interaction. Her current research interests include participatory design, creativity, co-adaptive instruments, mixed reality and interactive paper, and multidisciplinary research methods.

TAMARA MUNZNER

www.cs.ubc.ca/~tmm/
www.twitter.com/tamaramunzner

Characterization of Information Visualization Systems

I will discuss quantification in terms of a nested model of visualization design and evaluation. The nested model addresses concerns at four separate levels: the specifics of a domain situation, the abstractions of tasks and data that are framed in a domain-agnostic language, the idioms of visual encoding and interaction that visualization design choices can address, and the algorithms that instantiate these idioms as automatic computations. I will illustrate a variety of quantitative validation approaches through case studies that span these levels.

Short bio: Tamara Munzner is a computer science professor at the University of British Columbia and holds a PhD from Stanford. She has been active in visualization research since 1991, has published over sixty papers, and co-chaired InfoVis and EuroVis. Her book Visualization Analysis and Design appeared in 2014, and she received the IEEE VGTC Visualization Technical Achievement Award in 2015. She has worked on problem-driven visualization in many domains including genomics, computational linguistics, web log analysis, and journalism. Her technique-driven visualization interests include graph drawing and dimensionality reduction. Her evaluation interests include controlled experiments in a laboratory setting and qualitative studies in the field.

JOACHIM WEICKERT

www.mia.uni-saarland.de/weickert

Inpainting-Based Compression of Visual Data

Generating huge amounts of visual data, be it images or videos, has never been easier than today. This creates a growing demand for lossy codecs (coders and decoders) that produce visually convincing results also for very high compression rates.

Inpainting-based codecs can become an interesting alternative to classical, transform-based codecs such as JPEG. They store only a small, carefully optimised part of the data. In the decoding step, the missing information is filled in with a suitable inpainting mechanism.

However, to turn this temptingly simple idea into viable codecs with favorable performance, several difficult and interrelated questions must be answered first, in particular:

- What are the most useful inpainting processes?
- Which data should be kept?
- How can the selected data be encoded efficiently?
- How fast are the numerical algorithms?

This talk gives an overview of the main achievements in this emerging field, sketches practically relevant adaptations, and discusses open challenges.

Short bio: Joachim Weickert is professor of Mathematics and Computer Science at Saarland University (Saarbrücken, Germany), where he heads the Mathematical Image Analysis Group. He graduated and obtained his Ph.D. from the University of Kaiserslautern (Germany) in 1991 and 1996. He worked as Post-Doctoral Researcher at the University Hospital of Utrecht (The Netherlands) and the University of Copenhagen (Denmark), and as Assistant Professor at the University of Mannheim (Germany).

Joachim Weickert has developed many models and efficient algorithms for image processing and computer vision using partial differential equations and optimisation principles. In particular he has

contributed to diffusion filtering, optic flow computation, processing of tensor fields, and inpainting-based image compression. His scientific work covers more than 300 refereed publications. He has served in the editorial boards of ten international journals or book series and is Editor-in-Chief of the Journal of Mathematical Imaging and Vision. In 2010 he has received a Gottfried Wilhelm Leibniz Prize and in 2017 an ERC Advanced Grant.

POSTER SESSION

Tuesday, October 9, there will be a poster presentation in lecture hall V38.03 with the following contributions:

Michael Aichem, Karsten Klein, Ying Zhang, Kim Rehberg, Björn Sommer, Falk Schreiber: **Collaborative Multi-Perspective Exploration and Analysis of Movement Data in Immersive Environments**

Priscilla Balestrucci and Marc O. Ernst: **Understanding mechanisms of mutual adaptation**

Michael Blumenschein, Michael Behrisch, Stefanie Schmid, Simon Butscher, Deborah R. Wahl, Karoline Villinger, Britta Renner, Harald Reiterer, Daniel A. Keim: **SMARTexplore: Simplifying High-Dimensional Data Analysis through a Table-Based Visual Analytics Approach**

Valentin Bruder, Christoph Müller, Steffen Frey, Thomas Ertl: **Empirical Performance Quantification in Interactive Scientific Visualization: a Case Study of Rendering Volumes and Particles**

Nina Flad, Heinrich H. Buelthoff, Lewis Chuang: **How to use EOG for eye-tracking**

Florian Frieß, Johannes Häußler, Valentin Bruder, Steffen Frey, Thomas Ertl: **Adaptive Encoder Settings for Interactive Remote Visualisation on High-Resolution Displays**

Mereke van Garderen, Antoine Lhuillier, Fabian Beck, Daniel Weiskopf: **Label placement using density gradient descent**

Jochen Görtler, Christoph Schulz, Daniel Weiskopf, Oliver Deussen: **Visualizing Uncertainty using Modulated Splines**

Franz Götz-Hahn, Vlad Hosu, Hanhe Lin, Hui Men, Mohsen Jenadeleh, Oliver Wiedemann, Dietmar Saupe: **KonViD-10k: Designing a Diverse and Massive Video Quality Database**

Houssem Ben Lahmar, Melanie Herschel: **Runtime Optimization for Visual Exploration of Data Warehouses with EVLIN**

Daniel Maurer, Andres Bruhn: **ProFlow: Learning to Predict Optical Flow**

Hui Men, Dietmar Saupe, Andres Bruhn: **Adopting Visual Quality Assessment to Optical Flow Benchmarks**

Nils Rodrigues, Daniel Weiskopf: **Faithful Dot plots**

Christin Schätzle, Michael Blumenschein, Miriam Butt: **HistoBankVis: Investigating Language Change via Visual Analytics**

Marc Spicker, Franz Götz-Hahn, Thomas Lindemeier, Dietmar Saupe, Oliver Deussen: **Quantifying Visual Abstraction Quality for Computer-Generated Illustrations**

Patrick Tutzauer, Norbert Haala: **Deep Learning for Urban Data Classification**

Oliver Wiedemann, Vlad Hosu, Hanhe Lin, Franz Götz-Hahn, Dietmar Saupe: **Predicted Local Quality as a Resource Allocation Scheme in Variable Image Compression**

Johannes Zagermann, Ulrike Pfeil, Harald Reiterer: **Towards Measuring Cognitive Load in post-WIMP Environments**

CONFERENCE DINNER

The conference dinner will be held on Monday at 7:00 pm in Schlachthof Stuttgart. The rustic restaurant provides traditional Swabian dishes within the historic ambience of the former administration building of a slaughterhouse.

The dinner includes a visit to the pig museum that is directly connected with the restaurant (optional). On three floors and 1.000 square meters, the museum collection shows 46.000 exhibits regarding pigs from around the world.

HOW TO GET THERE?

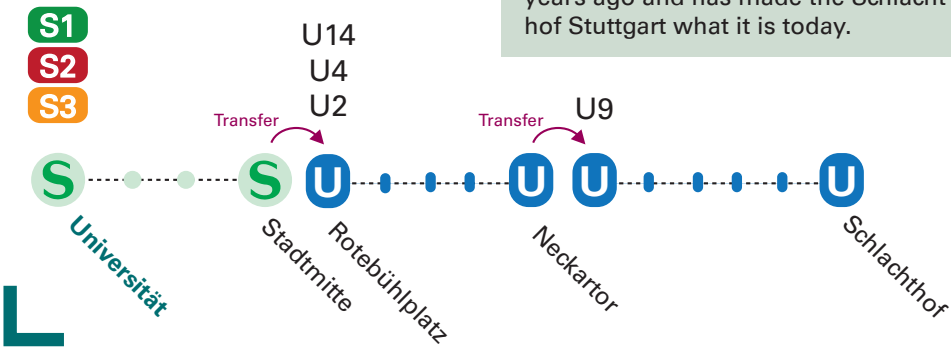
Take the urban railway (S-Bahn) **S1**, **S2**, or **S3** to station "Stadtmitte / Rotebühlplatz". Leave the station at exit "Rotebühlplatz". Change there to the subway (U-Bahn), take **U14** (direction Mühlhausen), **U4** (direction Untertürkheim) or **U2** (direction Neugereut) until stop "Neckartor" (approx. 6 minutes). Change there for subway **U9** (direction Hedelfingen) to travel to stop "Schlachthof". Follow the railway on Wangener Straße for 400 meters. Schlacht-hof is located at the left side.

Schlachthof Stuttgart

Schlachthofstraße 2
70188 Stuttgart
Phone: 0711 66419500
www.schlachthof.de

In 1902, the areal had 60 buildings and halls on an area of 12 hectares. In 1992, the company was shut down and most of the buildings demolished. The ravages of time gnawed at the remaining historic Art Nouveau buildings. The administrative building, the gatehouse, and the police station are the only architectural witnesses of a whole century with a turbulent history left over from the Stuttgart slaughterhouse.

Erika Wilhelmer took over the management of the building more than 40 years ago and has made the Schlachthof Stuttgart what it is today.



Stuttgart is the capital of southwest Germany's Baden-Württemberg state. It is known as a manufacturing hub. Companies as Mercedes-Benz and Porsche have headquarters and museums here. The city is filled with green spaces that wrap around its center. Popular parks include the Schlossgarten, Rosensteinpark, and Killesbergpark. Wilhelma, one of the largest zoos and botanical gardens in Europe, is just northeast of Rosenstein Castle.

PLACES TO VISIT IN STUTTGART

Visit the Cannstatter Wasen during the conference time!

The **Cannstatter Volksfest** is a tradition! It is not only the biggest festival in Baden Württemberg but it is also one of the biggest funfairs in Europe. Showmen, beer tents, and fun rides allow to amuse the guests at the Cannstatter Volksfest. The lively atmosphere on the Wasen is an attraction and the beer tents are the scene for boisterous celebrations accompanied by oompah music. This year, it takes place from September 27 to October 13.

The Palace Square is the heart of Stuttgart.

Stuttgart's Palace Square is the heart of the city. It is a place to linger, within easy walking distance of many of the city's attractions. Palace Square is Stuttgart's hub and an integral part of any stroll through town. The Square is also a place to celebrate and relax. Open-air concerts are held here on a regular basis against the backdrop of the New Palace and at the beginning of August Stuttgart's Summer Festival transforms Palace Square and the Upper Palace Gardens into a brightly lit, elegant promenade.

The Television Tower is the city's landmark.

Stuttgart's Television Tower, with its height of 217 metres, was the first of its kind in the world, and thus the prototype for many other television towers. Today, it is one of Stuttgart's best-known landmarks. No other place in Stuttgart can compete with the impressive panoramic views that the Tower affords over the city, the vineyards of the Neckar Valley and the Swabian countryside as far as the Alb, the Black Forest, and the Odenwald.

ABOUT THE SFB / TRANSREGIO 161

The Transregional Collaborative Research Center (SFB / Transregio) 161 "Quantitative Methods for Visual Computing" is an interdisciplinary research project that connects 20 projects at the Universities of Stuttgart, Konstanz, and Ulm as well as the Max-Planck Institute for Biological Cybernetics in Tübingen.

Around 40 experts are working together to improve the quality of future visual computing methods. Scientists in the fields of computer graphics, visualization, computer vision, and human-computer interaction are part of the collaborative research program. They aim to provide conceptual and tangible contributions, including metrics and models for quantification, new techniques and algorithms for visual computing, respective software, benchmark data that can be used for quantitative evaluation, and improved evaluation methodology.

"With the SFB / Transregio 161, we plan to establish quantification as a key ingredient of visual computing research.

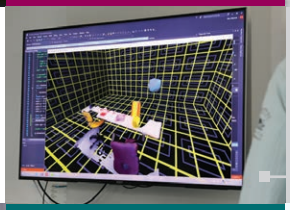
We see quantification as a cornerstone to further advance visual computing as an established and maturing research field."

Prof. Daniel Weiskopf
Spokesperson SFB / Transregio 161

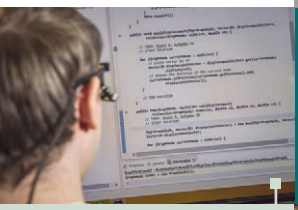
How can we find the adequate level of abstraction and the relevant parameters for making performance predictions for visualizations?

What kind of visualization technique do we easily understand?

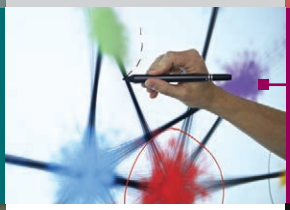
How does the virtual hand appearance influence our interaction in Virtual Reality?



How can we make computer vision algorithms faster and more stable?



Can we find linguistic patterns we could not have found without visual analytics?



Can we support visual analytics of uncertainty?

How can we prepare complex eye tracking data to be analyzed?

Which models in shape reconstruction best translate to the adaptive shape representation?

Do we understand the information behind visualizations? This is one of the questions the scientists of the SFB / Transregio 161 try to answer.

IMPRINT

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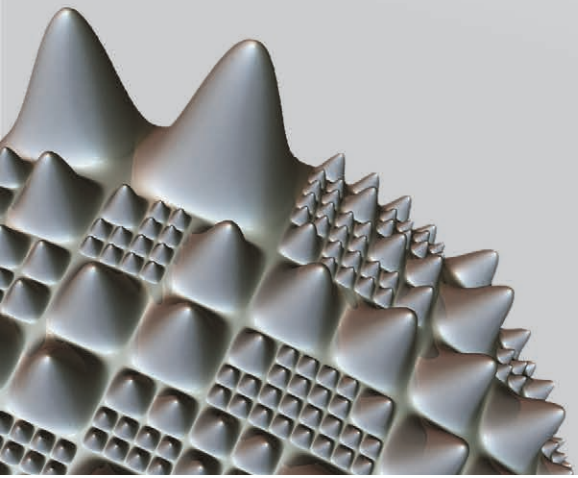

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