

We are looking for answers to questions such as:

“Does the viewer understand the information that is contained in computer generated images?”

“How easy are they to be understood?”

“How do we have to prepare image information for different devices?”

“What impact do virtual surroundings have on people?”

“How can we generate new applications from images?”

“Is there any additional benefit of new possibilities of interaction?”

About SFB-TRR 161

Transregional Interdisciplinary
Research Project

Subject of Research:
Quantitative Methods for
Visual Computing

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Currently 18 research projects

About 40 scientists

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Quantification in Visual Computing

Visions, Challenges and Activities of the SFB-TRR 161

Further information

www.sfbtrr161.de

 twitter.com/SfbTrr161
Blog visual-computing.org



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Challenges of Ubiquitous Technology



ubiquitous in our private lives as well as in research, and industry. Due to technological progress, it has become possible to process and generate a large amount of data.

Images play an important role in this development. On the one hand, they make it possible to present data in an optimum way, e.g. when results of complex computer calculations can be demonstrated as a film

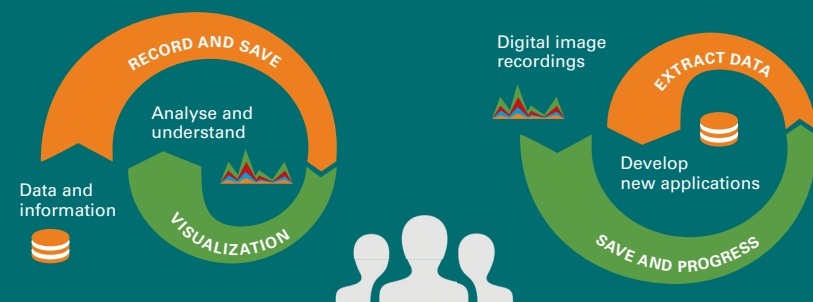
or picture. On the other hand, we can gain information for new technologies from digital images. For instance, camera systems in modern cars warn drivers about unexpected obstacles and thereby potentially prevent accidents.

Today's society requests quick comprehension of a large amount of data. Thus computer controlled processing and generating of images and visual information gains more and more importance. The young science of visual computing deals with this challenge.

Smartphones take our holiday pictures, send us reminders of upcoming appointments, and help us find the way to a meeting point. Cars are learning to see, computer generated images entertain us in movies and video games, and we view new products online in 3D before we decide to purchase them.

In our daily environment, we see lots of information on displays—on our computer screens and mobile devices, on virtual shop windows as well as huge projection screens. Computer screens have become

What is Visual Computing?



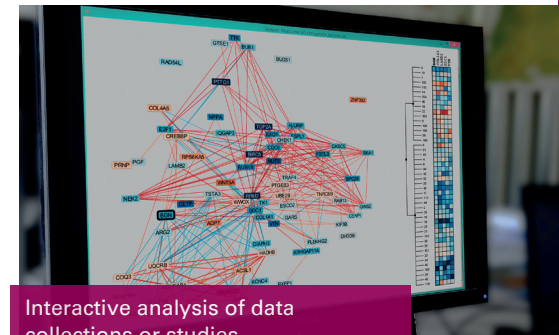
Visual Computing in Science, Industry and Daily Life

Visualization of generated data and simulated computation, virtual maps and tours or visual effects in films and on TV—visual

computing is present in science, industry and our daily lives. Some of the main topics of the SFB-TRR 161 are:



Virtual images of computing data and simulation



Interactive analysis of data collections or studies



Virtual surroundings and landscapes, such as for flight simulation



Image information on mobile devices



Identification of objects from video images – for driver assistance systems or surveillance systems



3D town models for urban planning, navigation systems or for use in tourism

Quantification – in Order to Make Quality and Applicability Measurable

In recent years visual computing has managed to establish its own faculty where computer scientists, engineers and psychologists develop efficient methods, techniques, and applications.

»So far an often neglected aspect in visual computing research is quantification. Only quantified methods can be applied effectively. Our research community will close this gap.«

— Prof. Daniel Weiskopf
Spokesperson of the SFB-TRR 161

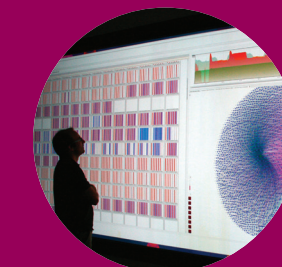
An often neglected aspect in visual computing research is quantification. Only by using quantification can the methods be applied effectively. Scientists of the SFB-TRR 161 work

on determination and measurability of quality and applicability of available methods in order to adapt them to the requirements of different applications and users.

For this, the SFB-TRR 161...



... performs specific user tests,



optimizes approaches for interactive visualisation,



takes physiological measurements,



analyzes eye-tracking studies,



explores possibilities of new interaction,



and develops models and algorithms.