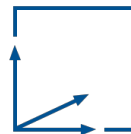


Module IN 2111

3D User Interfaces

- Dreidimensionale Nutzerschnittstellen -

Prof. Gudrun Klinker



Ethical Issues of 3D User Interfaces

SS 2023



Agenda

Overview

- 1. Background
- 2. Measures



1. Background

1.1 Compliance

1.2 Research involving Humans

1.3 Most important Issues

1.1 Compliance

Worldwide increasing awareness of ethical issues, regarding research that involves

- animals
- human subjects
- activities performed outside the EU
- elements that may
 - cause harm to the environment, plants or animals
 - involves endangered flora, fauna or protected areas
 - causes harm to humans or research staff

Project funding agencies (e.g.: EU, BMBF, DFG), conferences and journals start requesting formal ethical approval of research experiments. See:

<https://ec.europa.eu/programmes/horizon2020/en/h2020-section/ethics>

1.2 Research Involving Humans

Categorization of humans

- Volunteers for social of human sciences research
- Persons unable to give informed consent
- Vulnerable individuals or groups
- Children/minors
- Patients
- Healthy volunteers for medical studies

Physical interventions on the study patients

- Invasive techniques
- Collection of biological samples

1.2 Research Involving Humans

Personal data

- Collection/processing of sensitive personal data (e.g. health, sexual life style, ethnicity, political opinion, religious/philosophical conviction)
- Genetic information
- Tracking/observation of participants
- Further processing of previously collected personal data (secondary use)

1.2 Research involving Humans

Third countries

- Involvement of non-EU countries
- Use of local resources
- Import material from non-EU countries into EU
- Export material from EU countries to non-EU
- Benefits-sharing measures for involved low / lower middle income countries
- Persons in the third countries at risk (due to the research)

1.2 Research involving Humans

Environment & Health and Safety

- Use of elements that may cause harm to humans, including research staff
- Use of elements that may cause harm to the environment, animals or plants
- Involve endangered fauna and/or flora and/or protected areas

Further issues:

- Dual use: potential for military applications
- Misuse: potential for malevolent/criminal/terrorist abuse

1.3 Most important issues

Physical or psychological harm to test persons or staff

→ Human rights act, article 3: Prohibition of **torture**

- Motion
 - Virtual: cyber sickness?
 - Real: accidents?
- Ethical dilemmas
- Explicit exposure to catastrophic situations
 - Situation awareness (driver assistance tests: car accidents)
 - Immersion / presence
 - Embodiment (rubber hand experiment)

1.3 Most important issues

Personal data

→ Human rights act, article 8: Right to respect for **private** and family life

- Private personal information
- Videos / images showing people's faces
- Collection of tracking data
 - Eye tracking
 - Gestures
 - Compromising postures / (re)actions / paths
 - 2D: mouse, keyboard input
 - Speech: recorded interviews
 - Text: answers to questionnaires



Agenda

Overview

1. Background

→ 2. Measures



2. Measures

2.1 Dealing with ethical issues

2.2 Minimal effort

2.3 Ethics board

2.1 Dealing with Ethical Issues

It is not unusual to encounter ethical issues during HCI research

Don't be scared – deal with them!

- Be aware of potential ethical issues
- Address/raise them
- Discuss them (pros and cons)
- Propose appropriate ways to address them, minimizing their impact
- Get the approval of an officially installed ethics commission (e.g. ethics board of TUM)

2.2 Minimal Effort

1. Inform the user

(as much as possible without spoiling the experiment)

- Explain
 - What the user will be expected to do
 - How much time will be required (approximately)
- Let the user accustomize him/herself with the situation/system
 - Ask questions
 - Play with the system(s)
- Make very clear that
 - The user can quit the experiment any time – with all data acquired thus far being deleted completely

<Sample Task Description>

2.2 Minimal Effort

- <Sample Task Description>

Participation in Test **<testname>**

<date>

Dear participant,

~~thank~~ you for participating in the evaluation of **<d>** user interface designs to support investigating the **<interaction problem>**.

Important:

- You can abort the evaluation process for whatever reason at any stage. All tests ~~will then be stopped immediately~~. All of your test data ~~will be erased immediately~~. You do not need to explain why you want to abort.
- If we store live video recordings as part of the evaluation process, you may use a mask to hide your facial identity.

Your task focuses around the following test scenario:

...describe the test scenario [with respect to research issues in neuro robotics]...

You ~~are asked~~ to solve the following tasks:

- **[T1] ...first task in the user test to work on**
- **[T2] ...second task**
- ...
- **[Tt] ...**

if video recordings including human-understandable color images are part of the test setup: **<Detailed description of how video data is gathered, processed and stored/erased>**.

Overall test procedure (about **<m>** minutes):

1. Fill out the demographic questionnaire (about **<m1>** minutes).
2. Familiarize yourself with the technical setup (arbitrary time).
At this stage, you ~~will be presented~~ our overall environment and laboratory. You will have the chance to try out the particular user interface arrangement(s) that you ~~will be asked~~ to work with – in a specifically selected demonstration scenario. Feel free to ask ~~any and all~~ questions that come to mind. ~~Don't~~ be rushed.
3. Subsequently, you ~~will be exposed~~ to the evaluation scenario(s). You will be asked to solve the above defined tasks [T1]...[Tt] with **(each of <d>)** interface arrangement(s) (about **<m3>** minutes).
 - a. Solve the tasks with the currently given user interface (about **<m3a>** minutes).
 - b. Fill out questionnaires **(specific questions, as well as generic usability forms such as <SUS>, <NASA TLX>, or the like)** to provide feedback on how well you got along with this particular interface (about **<m3b>** minutes).
 - c. Provide us with informal comments on the user experience you just went through (approximately **<m3c>** minutes).
4. Closing discussion/interview. Please provide us with any additional insights/observations that come to mind (about **<m4>** minutes).

2.2 Minimal Effort

2. Obtain “informed consent” from the test person stating that

- They have read the task description
- They have been informed that they can quit
- They agree to being recorded/tracked (if that's the case)
- That statements from interviews can be quoted
- That test organizers are allowed to look at the data

<Sample Informed Consent Form>

2.2 Minimal Effort

- <Sample Informed Consent Form>

<Testname>

Consent form

Issue	Respondent's initial
I have read the information presented in the information letter about the study <testname>.	
I have had the opportunity to ask any questions related to this study, and received satisfactory answers to my questions, and any additional details I wanted.	
I have been informed that I can abort the tests any time without needing to provide reasons.	
I am aware that sensor data taken during the UI evaluations may be recorded for statistical evaluations and for understanding deficits in UI sensing technology. Video recordings of human-understandable color images will be anonymized.	
I give permission for recordings of sensor data to be kept temporarily for the purpose of statistical evaluations, as well as for algorithmic/technical improvements of the technical environment. I uphold the right to cover my face with a mask to hide my identity.	
I am also aware that excerpts from interviews may be included in publications to come from this research. Quotations will be kept anonymous.	
I give permission for the interview to be recorded using audio recording equipment.	
I understand that relevant sections of the data collected during the study may be looked at by individuals from the research group Augmented Reality of TU Munich, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my responses.	

With full knowledge of all foregoing, I agree to participate in this study.

I agree to being contacted again by the researchers if my responses give rise to interesting findings or cross references.

☐ no.

☐ yes

if yes, my preferred method of being contacted is:

☐ telephone

☐ email

☐ other

Participant Name:		Consent taken by	
Participant Signature:		Signature	
Date		Date	

2.2 Minimal Effort

3. Anonymize all user-related data IMMEDIATELY

Current set of rules (may need to be adapted in the future)

- Provide all test persons with random IDs
 - Do not store associations with their real names on the computer
 - Video recordings:
 - Do not keep long-term records of video data showing people in a clearly unique way
 - Showing people's faces
 - ...characteristic gestures???
 - Counter measures:
 - Anonymize video data by some video editing tool
 - Make test persons wear masks (HMDs) that cover their eyes
 - Anonymize their voice
 - ...
- <[Sample Demographic Questionnaire](#)>

2.3 Ethics Board

For research proposals, and for some international publications, it is mandatory to get a formal approval from a “local ethics board”

- Judgement of ethical issues may vary between cultures. Thus:
 - Ethical judgement must be cast “locally” (or with respect to a well-contained research community)
 - There is an ethics commission at TU Munich, situated within the faculty of medicine
 - [Ongoing work:] The UI / 3DUI community is in the process of generating guidelines regarding the ethical impacts of various groups (equivalence classes) of UI/UX tests

<Benford paper>

Thank you!

