Master-Project

VR Touchionary

or
Asymmetric Interaction Metaphors for Collaborative
3D Environments

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Motivation

3D Graphics

[Rise of the Tomb Raider]

Touchless Interaction

[Kinect Joyride]

Multiplayer

[Dreamhack 2004]

Motivation

- 125,000 blind and highly visually impaired people in Germany

- Current access methods to computers for blind people:

  - Braille line

  - Screen reader

  => Good for text, useless for 3D content

One one two.

$1 + 1 = 2$

Our Goal

- Multiplayer game

- 3D virtual environment for both, sighted and blind player

- Real-time interaction

- 3D visualization for the sighted player

- Touchless interaction for the sighted player

- Competitive gameplay

=> Asymmetric input/output devices

=> Asymmetric Tasks

Technologies

- VR devices for sighted player

    - Head-Mounted-Display

        - HTC Vive, Oculus

    - Input device

        - Vive Controller, Kinect Cyberglove

- For the blind player

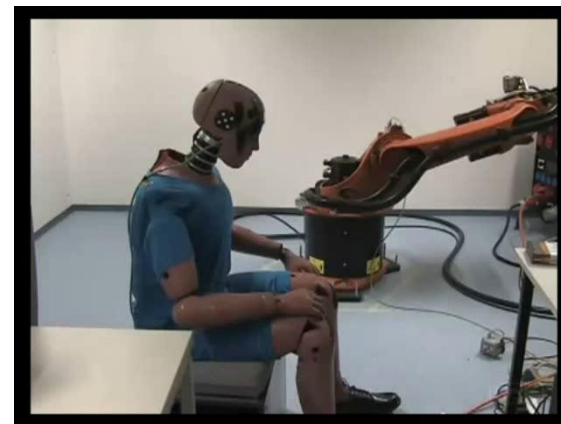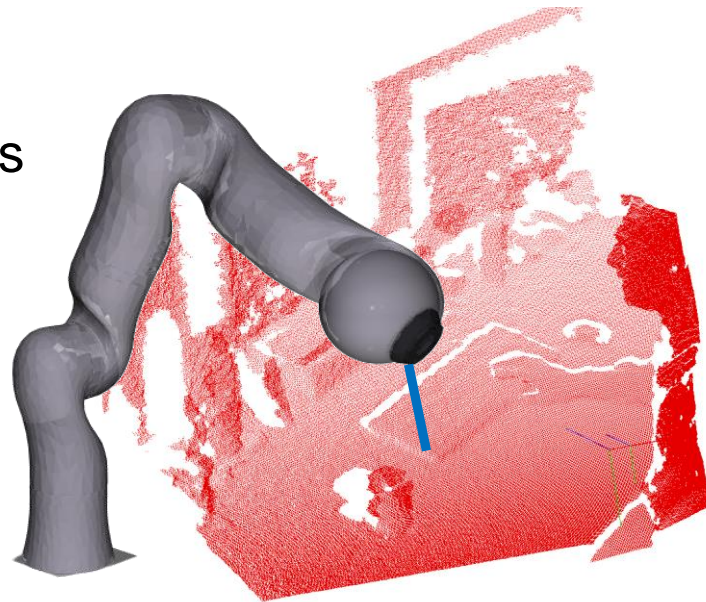   - Haptic devices

    - Audio

Example: Pict(ouch)ionary

Research Questions

- direct vs. indirect

- One- vs. bi-manual

- Pointcloud vs. Reconstruction

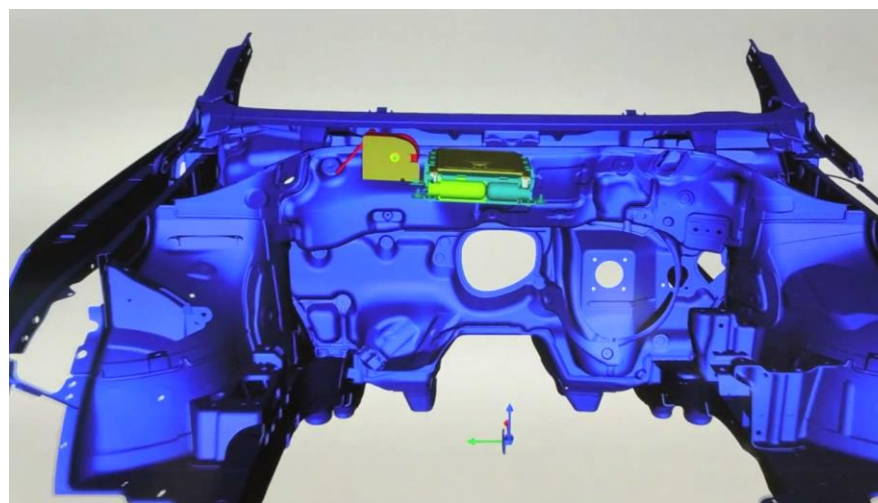- 3DOF vs. 6DOF

- …

More than just a Game…

- Robotics

- Simulations (Automotive industry,…)

- …

The (perfect) Team

- Some (many) application developers und algorithm tinkers:

    - Programming language: C++

    - Some knowledge in computer graphics

- 1-2 user interface developer

    - Nice-to-have: knowledge in human-computer-interaction, digital media, user study design

- 1-2 designers:

    - "Level design" for the virtual environments

More Infos

- Accompanying course:

  - Advanced computer graphics

- Degree programs:

  - Computer science, digital media, systems engineering, …

- Format: 1 semester (full time) project

- Results:

  - Cool game

  - Paper publication on an international conference

  - Follow up: master thesis to related topics