Proseminar
Ausgewählte Themen der Computergraphik

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https://cg.informatik.uni-freiburg.de/teaching.htm
Registration

– Choose a topic today or
– Check the web page for available topics
  – Choose a topic
  – Send an email with name, matriculation number, topic
  – Web page is updated and a confirmation is sent
Outline

– Introduction
– Organization
– Presentation
– Summary
Introduction to Computer Graphics

– Modeling / geometry processing
– Animation / simulation
– Rendering
  – Rasterization
  – Ray tracing
Modeling – Animation - Rendering

https://www.youtube.com/watch?v=Flz5eullMQo
Introduction to Computer Graphics

- Rendering
  - Homogeneous coordinates
  - Rasterization (rendering pipeline, Bresenham line algorithm, Phong illumination model, Williams shadow mapping)
  - Ray tracing (Appel ray tracing)
- Geometry processing
  - Marching Cubes
  - Mesh simplification
- Animation / simulation
  - Particle systems
Course Information

- Key course
  - Pattern recognition and computer graphics (rasterization)

- Specialization courses
  - Advanced computer graphics (ray tracing)
  - Simulation in computer graphics (e.g., fluids)

- Master project, lab course, Master thesis
  - Simulation track
  - Rendering track
Seminars / Projects / Theses

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<th>Semester</th>
<th>Simulation Track</th>
<th>Rendering Track</th>
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<td>Winter</td>
<td>Rasterization Course</td>
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<td>Simulation Course</td>
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<td>Summer</td>
<td>Lab Course</td>
<td>Ray Tracing Course</td>
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<td>- Simple fluid solver</td>
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<td>Simulation Seminar</td>
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<td>Winter</td>
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<td>- PPE fluid solver</td>
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<td>- Research-oriented topic</td>
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Animation and Rendering

– 500 M particles (with FIFTY2 Technology)
Simulation and Rendering

– Automotive Industry (with FIFTY2 Technology)

PreonLab: Drive Through
Outline

– Introduction
– Organization
– Presentation
– Summary
Organization

– Oral presentation of a topic
– Written report (10 pages)
– Attendance of all presentations is mandatory
– Recent information on https://cg.informatik.uni-freiburg.de/teaching.htm
Outline

- Introduction
- Organization
- Presentation
- Summary
Presentation

- 20 min – 25 min per presentation
- 5 min – 10 min discussion
  - Technical questions
  - Form of the presentation
Homogeneous coordinates

Die homogene Notation ist eine in der Graphik häufig verwendete Repräsentation von Positionen und Richtungen, die eine einheitliche Realisierung vielfältiger Transformationen von Positionen und Richtungen durch ein einfaches Matrix-Vektor-Produkt ermöglicht.

Quellen:
- https://cg.informatik.uni-freiburg.de/course_notes/graphics_02_transformations.pdf
Preparation

- Know your topic
  - Examine relevant material thoroughly
  - Do not try to circumvent problems
- Prepare slides
  - Allow 1 to 2 minutes per slide
  - Slides should be uniform and not too dense
  - Incorporate illustrations, slide titles should be helpful
- Rehearse your presentation
  - Gather feedback, adapt your presentation accordingly
Presentation

– Introduction
  – Introduce yourself and the title of your presentation

– Overview
  – Give an idea, but not too detailed

– Motivation
  – Illustrate the principle and/or applications
  – Explain the goal of your presentation
  – The audience should be eager to listen to your presentation
Presentation

– Main part
  – Should consist of distinguished parts
  – Separate different parts of the presentation explicitly
  – Each part should be introduced and summarized

– Summary
  – Tell the audience what you have told them
  – Ask for questions
Presentation - Summary

- Introduce the title and yourself
- Motivate and introduce your topic thoroughly
  - It is essential to arouse the interest of the audience
  - Give a brief overview, avoid too many details
- Structure your presentation
  - Introduce and summarize parts of your presentation
- Summarize the entire presentation
- Clearly mark the end of your presentation
  - E.g. “Thank you for your attention.”
Presentation

– Check the presentation environment prior to the presentation
– Do not occlude the projection
– Avoid idiosyncrasies
– Stay in time
Presentation

– Do not learn your talk by heart
– Do not read your talk
– Do not read slides, but explain every item on your slide
– Do not be shy or quiet
– Communicate self-confidence
Outline

– Introduction
– Organization
– Presentation
– Summary
Summary

- Preparation of an oral presentation
- Presentation (20 min – 25 min)
- Written report (10 pages)
- Start preparation in time
- Employ various sources
- Rehearse your talk