Proseminar
Ausgewählte Themen der Computergraphik

Matthias Teschner
Contact

- Matthias Teschner

052 / 01-005
teschner@informatik.uni-freiburg.de

https://cg.informatik.uni-freiburg.de/
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
Context

Modeling → Computer Graphics → Rendering → Animation

CGI Making of Share a Coke VFX Breakdown by ARMA.
Modeling – Animation - Rendering

MAKING OF “SHARE A COKE”

Music by: Chocolate Puma & Firebeatz
I Can’t Understand (Original Mix)

CGI Making of Share a Coke VFX Breakdown by ARMA.
Seminar Topics

- Rendering:
  Rendering pipeline, Bresenham algorithm, Ray tracing, Phong illumination model, Williams shadow mapping

- Modeling:
  Marching Cubes, Mesh simplification

- Animation:
  Particle systems

- Miscellaneous:
  Homogeneous coordinates
Course Information

– Key course
  – Pattern recognition and computer graphics (modeling, rendering, animation)

– Specialization courses
  – Advanced computer graphics (global illumination)
  – Simulation in computer graphics (deformable and rigid solids, fluids)

– Master project, lab course, Master thesis
  – Simulation track, rendering track
# Seminars / Projects / Theses in Graphics

<table>
<thead>
<tr>
<th>Semester</th>
<th>Simulation Track</th>
<th>Rendering Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>Key Course</td>
<td>Key Course</td>
</tr>
<tr>
<td></td>
<td>Simulation Course</td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>Lab Course</td>
<td>Rendering Course</td>
</tr>
<tr>
<td></td>
<td>- Simple fluid solver</td>
<td>Lab Course</td>
</tr>
<tr>
<td></td>
<td>- Simulation Seminar</td>
<td>- Simple raytracer</td>
</tr>
<tr>
<td>Winter</td>
<td>Master Project</td>
<td>Master Project</td>
</tr>
<tr>
<td></td>
<td>- PPE fluid solver</td>
<td>- Monte Carlo raytracer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rendering Seminar</td>
</tr>
<tr>
<td>Summer</td>
<td>Master Thesis</td>
<td>Master Thesis</td>
</tr>
<tr>
<td></td>
<td>- Research-oriented topic</td>
<td>- Research-oriented topic</td>
</tr>
</tbody>
</table>
Simulation 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
  - Presentations are given at the same time and in the same room as the introduction (announced in the course catalog and on our web page stated below)
- Written report (approx. 10 pages)
- Attendance of all presentations is mandatory
- Recent information on https://cg.informatik.uni-freiburg.de/teaching.htm
Mandatory Submissions

– Presentation slides and written report in two separate files
– Per email to Prof. Teschner
– In PDF format
– Until the last day of lectures of the semester
Consultations

– Two voluntary consultations
– Requested per email
– First consultation
  – General discussion of the outline
  – Content questions
– Second consultation
  – Discussion of the fully prepared presentation
  – Not later than one week prior the presentation
Outline

– Introduction
– Organization
– Presentation
– Summary
Presentation

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

– 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

- Oral presentation (20 min – 25 min)
- Written report (approx. 10 pages)
- Start preparation in time
- Employ various sources
- Rehearse your talk
Summary

– Presentations take place at the same time and in the same room as the introduction
  – Announced in the course catalog and on our web page https://cg.informatik.uni-freiburg.de/teaching.htm
– Attendance of all presentations is mandatory
Summary

– Mandatory submissions
  – Per email to Prof. Teschner
  – In PDF format
  – Presentation slides and written report in two separate files
  – Until the last day of lectures of the semester
Summary

- Two voluntary consultations
- Requested per email
- First consultation
  - General discussion of the outline
  - Content questions
- Second consultation
  - Discussion of the fully prepared presentation
  - Not later than one week prior the presentation