Seminar
Advanced Topics in Rendering

Matthias Teschner
Contact

– Matthias Teschner

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

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

- Introduction
- Presentation
- Organization
- Topics
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

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<th>Semester</th>
<th>Simulation Track</th>
<th>Rendering Track</th>
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<tr>
<td>Winter</td>
<td>Key Course</td>
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<td>Simulation Course</td>
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<td>Summer</td>
<td>Lab Course</td>
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<td>- Simple fluid solver</td>
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<td>Simulation Seminar</td>
<td>- Simple raytracer</td>
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<td>Winter</td>
<td>Master Project</td>
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<td>- PPE fluid solver</td>
<td>- Monte Carlo raytracer</td>
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<td>Rendering Seminar</td>
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<td>Summer</td>
<td>Master Thesis</td>
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<td>- Research-oriented topic</td>
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Topics in Graphics

- Modeling / geometry processing
  - Mesh simplification, surface reconstruction
- Animation
  - Rigid objects
  - Deformable objects
  - Fluids
  - Collision handling
- Rendering
  - Ray tracing, volume rendering, rasterization
Simulation and Rendering

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

– Automotive Industry (with FIFTY2 Technology)

PreonLab: Drive Through
Goals

- Familiarize yourself with a topic
  - Based on scientific publications
  - Using information from the authors' web pages
  - Using additional sources (internet, books)
- Prepare a comprehensible presentation
- Do not just reproduce the paper
- Adapt the organization and the focus of the paper in order to get a comprehensible presentation
  - You can skip some content
  - You can add content from additional sources
Outline

- Introduction
- Presentation
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Presentation

– 30 ± 5 min per presentation
– 10 min discussion
    – Technical questions
    – Form of the presentation
**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
Outline

- Introduction
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Requirements

– Presentation of a topic, 30 min, (English or German)
– Discussion (technical aspects, form), 10 min
– Written documentation (English or German)
– Attendance of all presentations is mandatory
– Information on https://cg.informatik.uni-freiburg.de/teaching.htm
– Submission deadline for presentation (PDF) and report (PDF): Last day of lectures of the semester
Registration

- Obtain the papers from https://cg.informatik.uni-freiburg.de/intern/seminar/
- Check for available topics, papers and dates
- Choose a paper / topic, choose a date
- Send an email to Matthias Teschner teschner@informatik.uni-freiburg.de with your registration request stating name, topic, date
- Register for the seminar in the campus management system
Goals

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  – Using additional sources (internet, books)
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Overview

- Raytracing
- Radiosity
- Rasterization
- Volume rendering
- Surface reconstruction
- ...
- All animation topics
Publications