Seminar
Advanced Topics in Animation

Matthias Teschner
Contact

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

– Introduction
– Presentation
– Organization
– Topics
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
<table>
<thead>
<tr>
<th>Semester</th>
<th>Simulation Track</th>
<th>Rendering Track</th>
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<tbody>
<tr>
<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></td>
<td>- Simple fluid solver</td>
<td>Lab Course</td>
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<td>Simulation Seminar</td>
<td>- Simple ray tracer</td>
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<td>Winter</td>
<td>Master Project</td>
<td>Master Project</td>
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<td></td>
<td>- PPE fluid solver</td>
<td>- Monte Carlo ray tracer</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>
<td>- Research-oriented topic</td>
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Topics in Graphics

- Animation
  - Rigid objects
  - Deformable objects
  - Fluids
  - Collision handling
- Rendering
  - Ray tracing, volume rendering, rasterization
- Modeling / geometry processing
  - Mesh simplification, surface reconstruction
- 500 M particles (with FIFTY2 Technology)
Topics - Example

– 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
– Organization
– Topics
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
Preparation

– Rehearse your presentation
  – Gather feedback
  – Adapt your presentation accordingly
  – Check your slides with Matthias Teschner one week before your talk
Presentation

- Introduction
  - Introduce yourself, 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
  - Cite references
  - 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
Structure of the Presentation

- Title
- Motivation, introduction to the topic
- Information on author, affiliation, source
- Outline of the presentation
- Description of the problem
- Methods to solve the problem
- Results
- Discussion of benefits, drawbacks, problems
- Summary
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
General Comments

– 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
– Presentation
– Organization
– Topics
Requirements

– Presentation of a topic, 30 min, (English or German)
– Discussion (technical aspects, form), 15 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): End of July
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
– Do not forget to register the seminar at the online portal / examination office
Goals

- Familiarize yourself with a computer graphics 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
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Outline

– Introduction
– Presentation
– Organization
– Topics
Overview

- Fluids (particles or grids)
- Deformable objects
- Rigid objects
- Collision detection
- Contact handling
- Surface reconstruction / tracking
- ...
- All rendering topics
# Publications

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