Seminar
Advanced Topics in Animation

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Contact

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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

Seminars / Projects / Theses

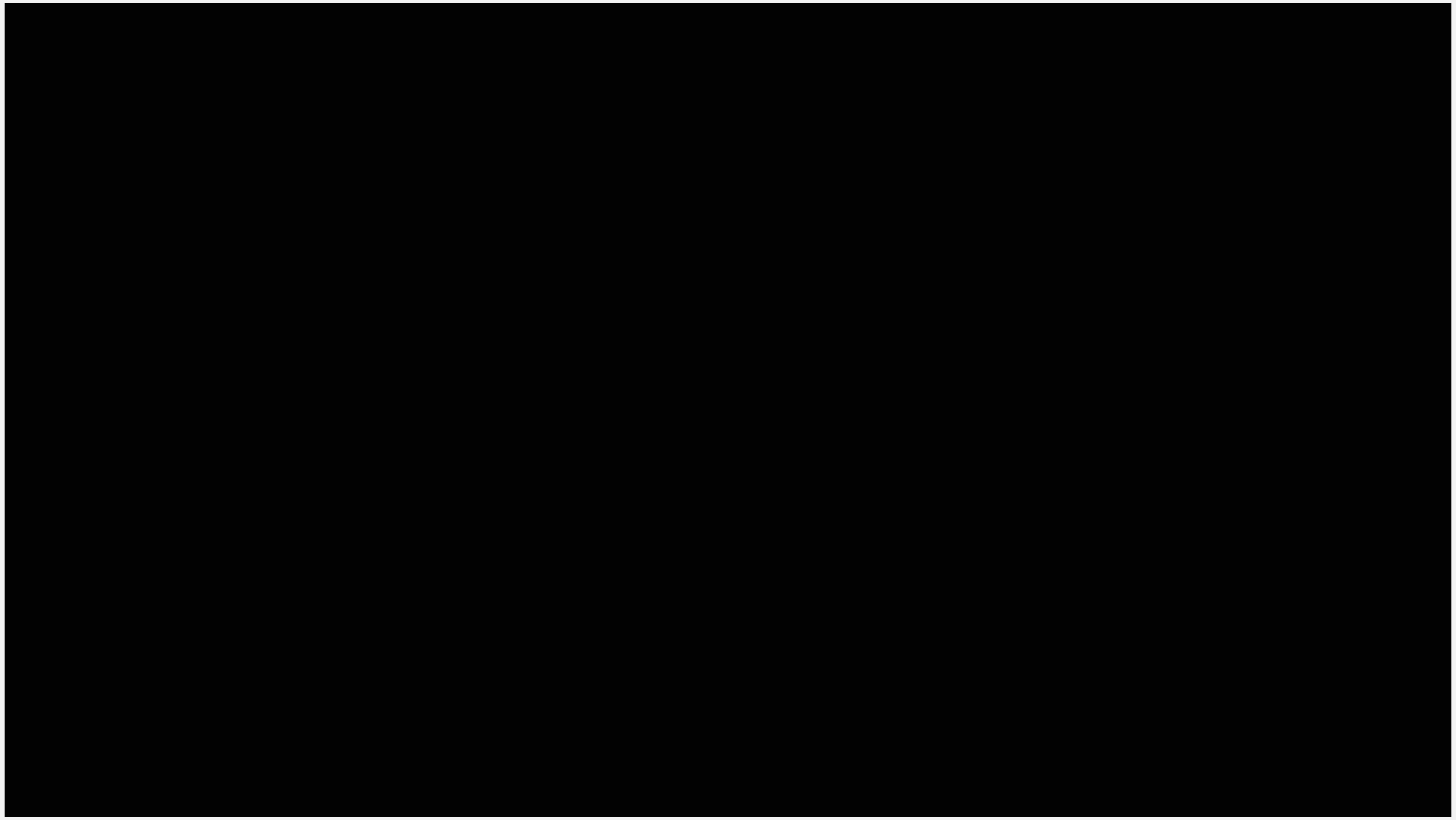
Semester	Simulation Track	Rendering Track
Winter	Rasterization Course Simulation Course	Rasterization Course
Summer	 Lab Course - Simple fluid solver Simulation Seminar	Ray Tracing Course Lab Course - Simple ray tracer
Winter	Master Project - PPE fluid solver	Master Project - Monte Carlo ray tracer Rendering Seminar
Summer	Master Thesis - Research-oriented topic	Master Thesis - Research-oriented topic

Topics in Graphics

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

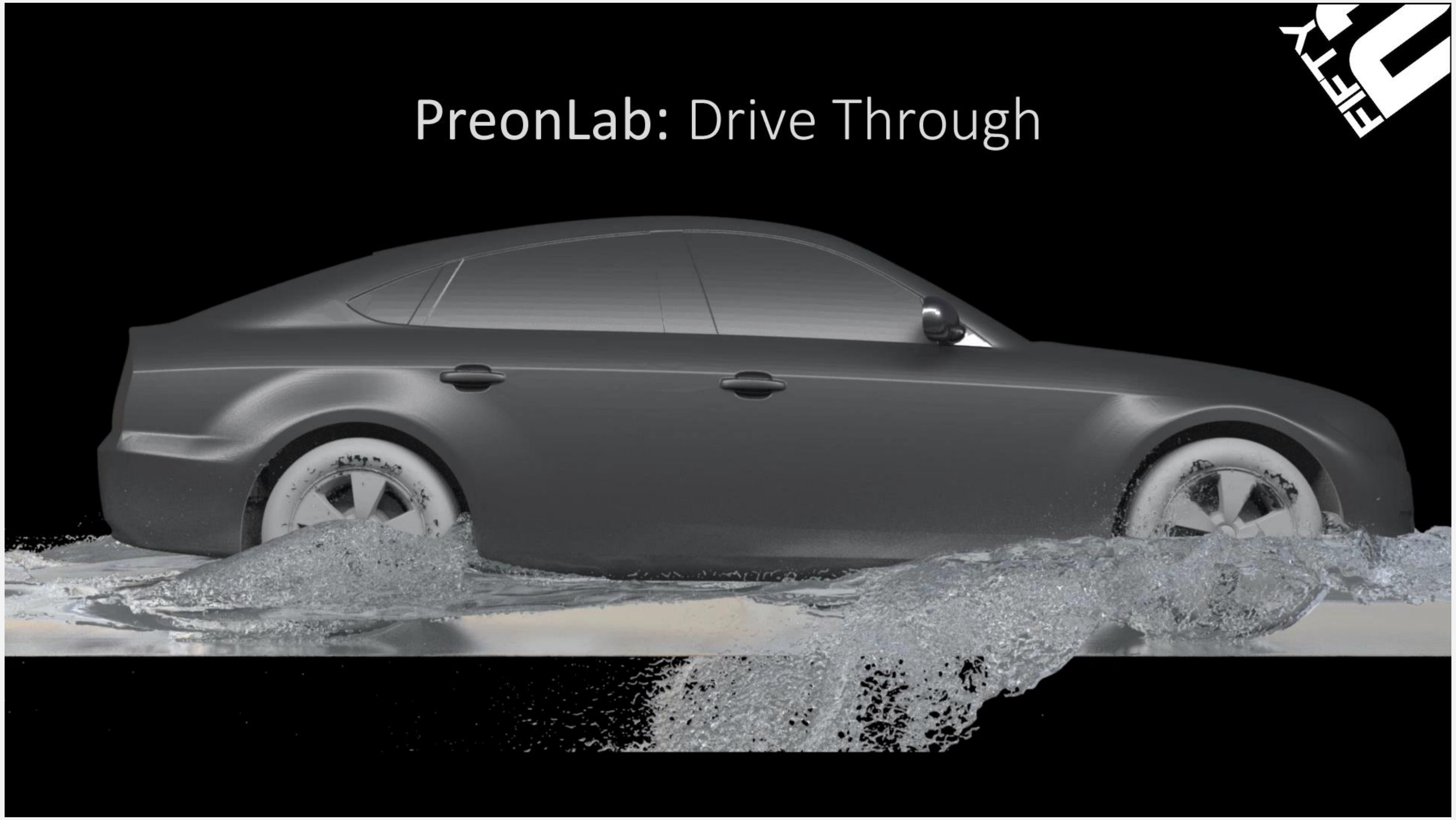
Topics - Example

– 500 M particles (with FIFTY2 Technology)



Topics - Example

– Automotive Industry (with FIFTY2 Technology)



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

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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

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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

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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

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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

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Overview

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

Publications

dataStructures 2005 CGF collisionDetection.pdf	04-Apr-2013 16:55	2.7M
dataStructures 2011 CGF dataStructuresSPH.pdf	04-Apr-2013 16:56	3.1M
dataStructures Lagae - Grids - 2008.pdf	17-Dec-2009 15:44	3.2M
dataStructures Onderik - Efficient Neighbor Search for Particle-based Fluids.pdf	09-Oct-2008 09:54	4.2M
gridFluids StableFluids.pdf	27-Aug-2013 10:22	1.3M
gridFluids StableFluidsImplementation.pdf	29-Apr-2014 12:33	1.0M
gridFluids fluid-EulerParticle.pdf	10-Apr-2013 10:17	1.0M
gridFluids fluid flow for the rest of us.pdf	10-Apr-2013 10:18	553K
gridFluids particleFluids 2007 SIGGRAPH course.pdf	29-Apr-2014 12:57	5.5M
particleFluids 2007 SCA SPH.pdf	19-Nov-2007 16:34	629K
particleFluids 2014 StateOfTheArt.pdf	07-Mar-2014 17:00	46M
particleFluids Monaghan - SPH - 2005.pdf	04-Jul-2006 13:54	2.6M
particleFluids Solenthaler-pcisph.pdf	08-Feb-2012 10:52	6.5M
positionBasedDynamics 2013 EG positionBased.pdf	04-Apr-2013 16:56	17M
positionBasedFluids 2014 SIGGRAPH.pdf	31-Aug-2013 16:41	5.6M
rigidFluidCoupling 2009 TVCG rigidFluidCoupling.pdf	04-Apr-2013 16:57	1.5M
rigidFluidCoupling 2010 VRIPHYS boundaryHandling.pdf	04-Apr-2013 16:56	1.8M
rigidFluidCoupling 2012 SIGGRAPH rigidFluidCoupling.pdf	04-Apr-2013 16:56	23M
surfaceReconstruction 2012 VRIPHYS surfacePipeline.pdf	04-Apr-2013 16:56	22M
surfaceReconstruction sol cavw07.pdf	04-Apr-2013 16:57	1.9M
surfaceReconstruction survey of marching cubes.pdf	04-Apr-2013 16:59	527K
surfaceReconstruction zhu-siggraph05-sandfluid.pdf	04-Apr-2013 16:58	1.7M
surfaceTracking siggraph2011.pdf	04-Apr-2013 17:03	33M
volumeRenderingInVisualEffects2010.pdf	10-Apr-2013 10:12	65M
volumeRenderingProductionFundamentals2011.pdf	10-Apr-2013 10:13	20M
volumeRenderingProductionSystems2011.pdf	10-Apr-2013 10:13	82M