

Advanced Topics in Animation - Seminar

Introduction

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Outline

- introduction
- presentation
- organization
- topics

Course Information

- key course
 - pattern recognition and computer graphics (rasterization-based rendering)
- specialization courses
 - advanced computer graphics (ray tracing)
 - simulation in computer graphics (e.g., fluids)
- master project, lab course, Master thesis
 - two tracks: simulation, rendering

Seminars / Projects / Theses in Graphics

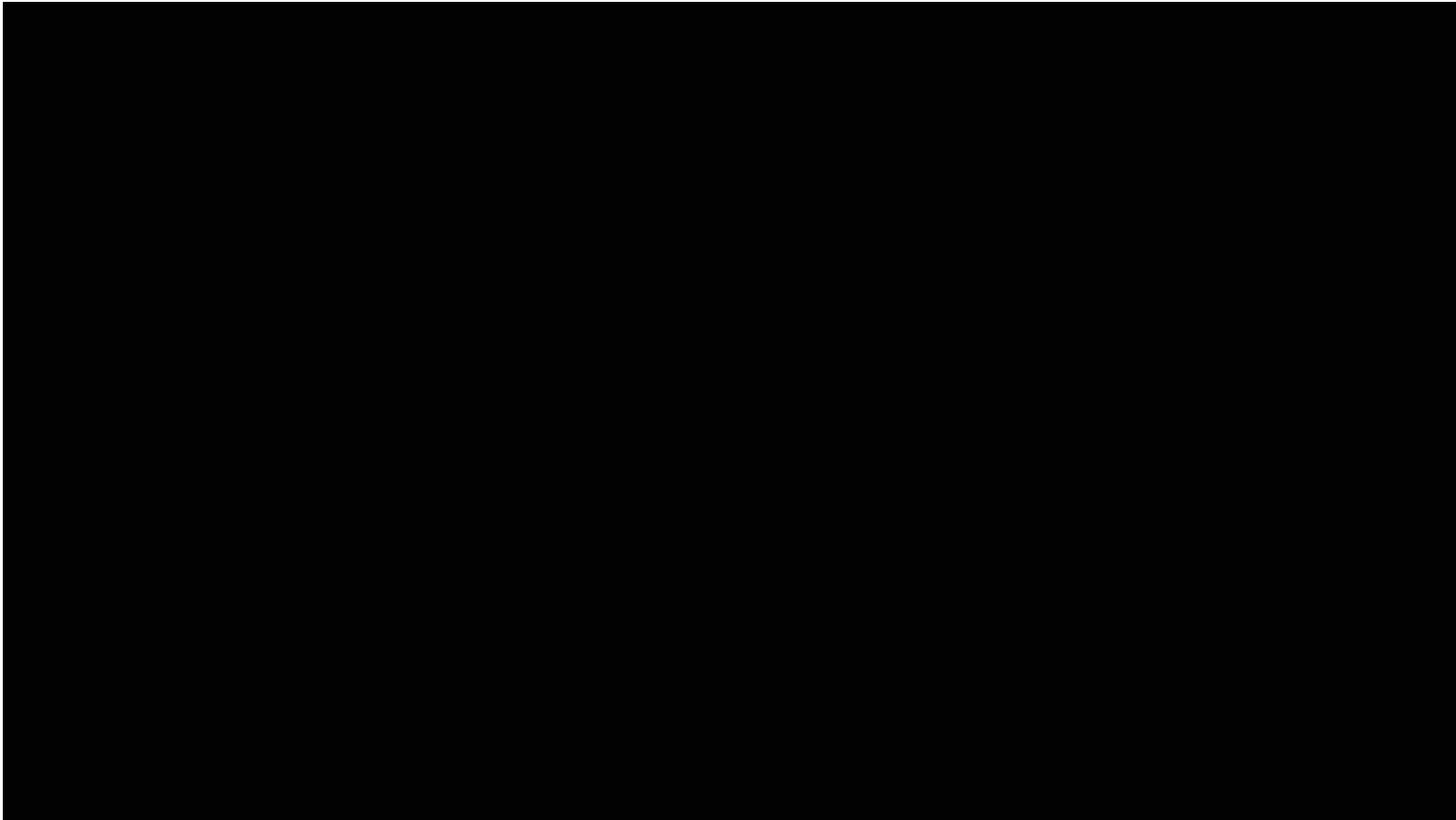
Semester	Simulation Track	Rendering Track
Winter	Rasterization Course Simulation Course	Rasterization Course
Summer	Lab Course - simple fluid solver Simulation Seminar	Raytracing Course Lab Course - simple raytracer
Winter	Master Project - PPE fluid solver	Master Project - Monte Carlo raytracer Rendering 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, image-based rendering, rasterization
- 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
- 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 right at the beginning
- 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.”

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
 - 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>

Registration

- obtain the papers from <https://cg.informatik.uni-freiburg.de/intern/seminar/>
- check the syllabus and the topic list for available 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

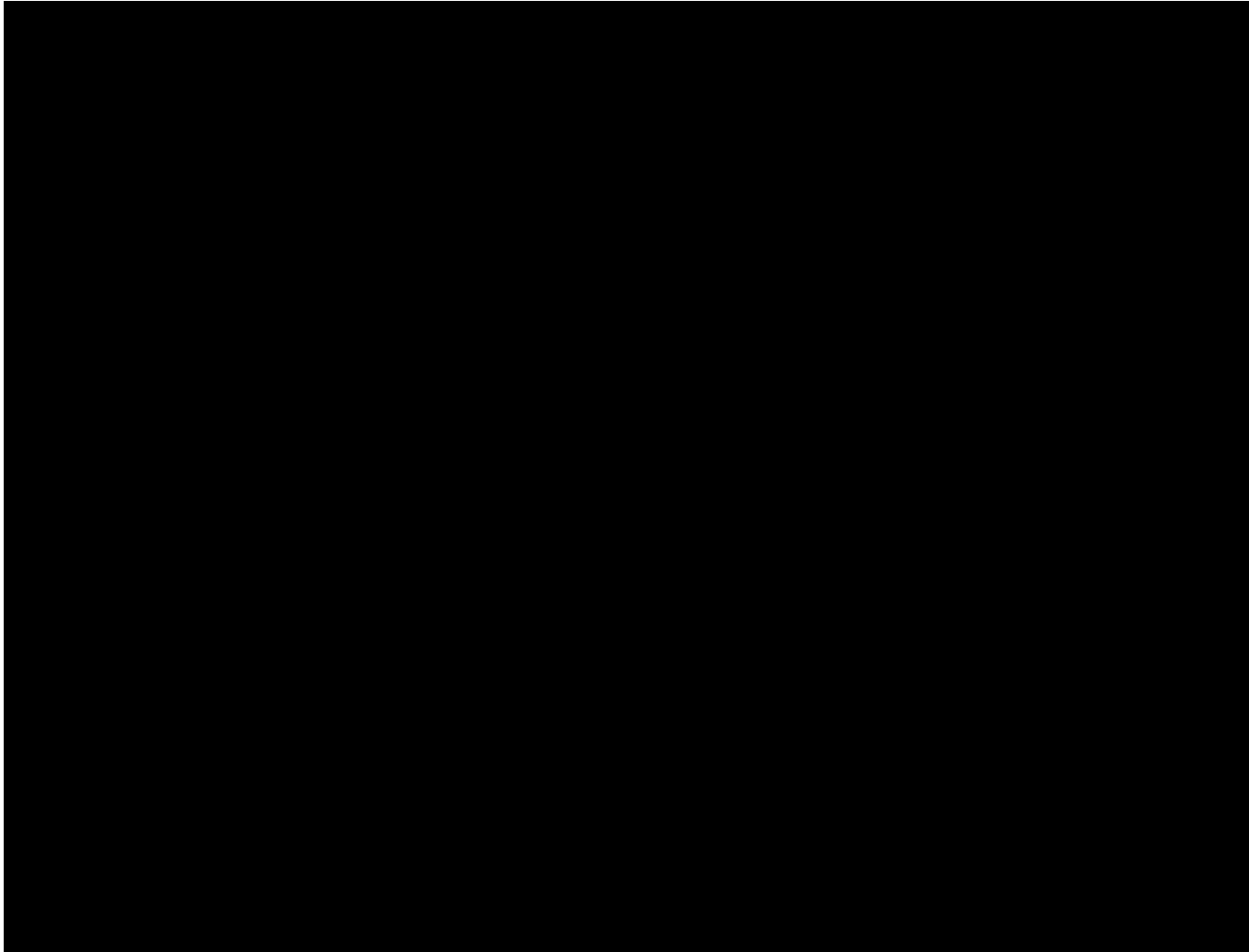
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Example



Overview

- particle-based fluids
- grid-based fluids
- position-based fluids / dynamics
- data structures
- fluid-rigid coupling
- surface reconstruction
- surface tracking
- volume rendering

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