Seminar Wissenschaftliches Arbeiten
180.765, SS 2018, 2.0h (3 ECTS)

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Important!

There is a common first part – this is second part

These slides will be on the website after this meeting.

Topics are presented and assigned here today.
Practice selecting, reading and understanding

- Search and select papers relevant to your topic
- Summarize them as a state-of-the-art report
- Prepare a talk about your topic in the seminar

This permits in-depth familiarization with the topic
Tasks

• Submit a literature list (chosen with supervisor)
• Attendance of 3 lectures
• Meetings with supervisor: paper selection, discussion of papers, preparing talk slides
• Alternative: evaluate and compare algorithms
• Final talk in seminar
• Analyze recent papers (select with supervisor)
• Study secondary literature to understand topic
• How to find relevant papers:
  • SIGGRAPH Proceedings
  • Google Scholar: find the right key words
  • Survey papers, often-referenced papers
• Submits a list of 10+ papers per email to supervisor & me → official registration
• 8 pages per student, preferably in English
• Format in the style of a scientific paper
• Use LaTeX template on course website
• LaTeX tools and guides also on the website
• Submit the draft in PDF format, per email to supervisor+organizer
• Draft has to be complete and min. 8 pages!
You will get a draft of another student to review
Typical conference review form (Eurographics)
This helps author to improve the manuscript
Guides on review writing on course website
You will receive 2 reviews (student, supervisor)
Improve final report according to reviews
Seminar Talk

- Prepare slides in advance, using template
- Each student talks for 15 minutes, pref. English
- 5 minutes discussion after each talk
- Focus is on overview/comparison of methods
- Present so that other students will understand it
- Active discussion is mandatory and is graded
- Submitted slides are presented on seminar PC
Grading

• First part: 17%, second part: 83%, thereof:
  • Lecture attendance 5%
  • Review: 20%
  • Seminar slides+talk: 30%, discussion 5%
  • Final report: 40%

• Late submission: 15% off per day, max. 1 week
Important Dates

- 26.03. 23:59 Submit literature list (per email)
- 10.04. 15:00 – 16:30 Lecture Prof. Wimmer
- 25.04. 15:00 – 16:30 Lecture Prof. Gröller
- 07.05. 23:59 Submit report draft
- 15.05. 16:00 – 17:30 Prof. Purgathofer
- 27.06. 23:59 Submit slides (per email)
- 28.06. 09:00 – 15:00 Seminar talks
- 28.06. 23:59 Submit final report (per email)
Now 14 topics will be presented

After the presentation, please mark down at least 3 in order of preference (1, 2, 3, …)

I will try to make a fair assignment of topics
Reinforcement learning is an amazing tool for optimizing the behavior of an agent in an environment. It is capable of playing computer games at a high level and also has applications in computer graphics.

Károly Zsolnai-Fehér
Neural networks are universal function approximators that are used to solve difficult problems in image and speech recognition, image synthesis, and many more.
3 Simulating Color Vision Deficiency

Investigate how color vision deficiency (CVD) is simulated in
- 2D images
- 3D applications
- VR applications

Investigate methods for crowd simulations for emergency/evacuation scenarios in:

- VR applications (and 3D applications)
- Mixed reality applications
provide an chronological overview of real-time global illumination techniques
provide an overview of physically based camera/lens models for rendering
Scan with Google Tango or Microsoft Kinect
Convert depth information to point clouds
Convert point cloud to mesh
8 Level-of-Detail Systems for Meshes

- Render only the necessary
- Increase performance
- Popping Artifacts

69,451 polys  2,502 polys  251 polys  76 polys
Conduct a survey on signed distance field rendering.
Conduct a survey on image comparison and quality metrics.
How to calculate/store normals for coarser MIP-map levels

Averaging normals => information is lost

Preserve normals distribution information

Our Method  Normalized MM  Toksvig
Overview about the fundamental ideas of different real-time shadow techniques

- Shadow Mapping
- Shadow Volumes
- Subdivided Shadow Maps
- Hierarchical Shadow Volumes
- Perspective Shadow Mapping
- Variance Shadow Mapping

...
Research advantages between CPU and GPU animated particle systems

What does the geometry look like?

Rendering?
Fire, Water, Ice, Earth, Lightning, ... (pick some)
Research how to create impressive real-time visualizations of classic „elements“
Topic Assignment

• Please mark at least 3 topics in order of preference (1, 2, 3, …), with:
  Name, student number and email
• Hand in the sheet
• Then I will assign the topics on the spot
Questions?

- Get in contact with your supervisor ASAP
- Discuss literature list with your supervisor
- Submit the list (to supervisor and me) by 26.3.