Physically-based Methods for 3D Games and Medical Applications

Contact

http://graphics.ethz.ch/seminar/
Matthias Mueller   muellerm@inf.ethz.ch
Matthias Teschner teschner@inf.ethz.ch

Novodex

CGL

Topics

- deformable modeling based on particles, springs, finite elements
- rigid-body simulation
- collision detection and collision response

- applications in games, medicine, cloth, hair, ...

- simulation of real-world phenomena, fluids, gases, ...

- physically-based methods implemented in graphics hardware

Requirements

- interest in a relevant topic
- review of related scientific publications (see "source" slide)

- check with coordinators
  - for the relevance of the chosen topic or paper(s)
  - for a slot in the seminar schedule: first come, first serve

- preparation of an oral presentation in German or English
- ~ 30 min presentation, ~ 15 min discussion (content, style)
- preparation of an accompanying document, at least handouts
- exercise talk

Presentation Structure

- title, information on author, affiliation, source
- motivation, introduction to the topic
- outline of the presentation
- description of the problem
- methods to solve the problem
- results
- discussion about benefits and drawbacks
- conclusion

Sources 1

- http://www.cs.unc.edu/~lin/COMP259/PAPERS/list.html
  - collision detection, rigid bodies, deformable modeling, applications
  - use www.acm.org/dl to download ACM publication

- http://graphics.stanford.edu/~fedkiw/
  - SIGGRAPH paper on collision detection, fire, smoke, liquids

- http://numerik.math.uni-duisburg.de/people/strzodka/strzodka.htm
  - graphics hardware for numerical computations

Sources 2

- www.google.ch
  - everything

- http://web.informatik.uni-bonn.de/II/ag-klein/people/zach/
  - collision detection

- http://www-grail.usc.edu/pubs.html
  - deformable modeling, collision detection, cloth

- http://miralabwww.unige.ch/newMIRA/MIRALabHtml.htm
  - cloth, hair, deformable modeling

Sources 3

- http://www.cs.ucl.ac.uk/research/vr/Projects/3DCentre/cloth_simulation_links.htm
  - general links to cloth simulation, no publications

- http://graphics.stanford.edu/courses/cs348c-95-fall/topics.html
  - fire, smoke, plants, trees, skin, hair, cloth -> www.acm.org/dl

- http://www.dgp.toronto.edu/people/stam/reality/Research/pub.html
  - natural phenomena

Sources 4

- http://www.stanford.edu/~jgao/collision-detection.html
  - collision detection

- http://www-2.cs.cmu.edu/~baraff/papers/index.html
  - rigid bodies, deformable objects, collision, cloth

- http://www.cs.berkeley.edu/~job/
  - plastic, elastic deformation, fracture

- http://www.cs.brown.edu/~tor/
  - list of SIGGRAPH papers 2000 - 2002