CSE 788.14
Physically Based Simulation

Fall 2011, 3 units
Mon Wed Fri 2:30PM - 3:18PM
Central Classroom Bldg 0218

http://www.cse.ohio-state.edu/~whmin/courses/cse788-2011-fall/
cse788-2011-fall.html
About the teacher

• Huamin Wang

• Assistant Professor in CSE

• Postdoc at Berkeley (2 years)

• PhD at Georgia Tech

• whmin at cse.ohio-state.edu

• Office Hours: Mon Wed Fri, after lecture
Self-Introduction Session
About the course

• PhD students
• Master students
• Advanced undergraduates

• Backgrounds:
  Physics, linear algebra, calculus, computer graphics (using OpenGL), C/C++, numerical methods
Course Policies

• No assignment!
  • No exams!

• Presentation (40%)
  • On a selected topic or paper
  • Survey on the topic
  • Basic algorithms

• Final project (60%)
  • Individual or group of two
  • Implement a paper of your choice
  • Due on Dec 5-8
  • Three short presentations (8 minutes each)
Course Policies

- Existing project? Ok.
- Discussion with others? Ok.
- Using other’s code? Must notify it.
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<tr>
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<th>Presenter</th>
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<tbody>
<tr>
<td>9/21</td>
<td>Introduction</td>
<td>Huamin</td>
<td>10/28</td>
<td>Finite Element Method</td>
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<td>9/23</td>
<td>Background</td>
<td>Huamin</td>
<td>10/31</td>
<td>Co-rotational FEM</td>
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<td>9/26</td>
<td>Tensor Calculus</td>
<td>Huamin</td>
<td>11/2</td>
<td>Mid-term Presentation</td>
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<td>9/28</td>
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<td>Huamin</td>
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<td>11/7</td>
<td>Fracturing</td>
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<td>Nonlinear elasticity</td>
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<td>Particle-Based Fluid</td>
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<td>Cloth II</td>
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<td>Cloth III</td>
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<td>12/2</td>
<td>Project Presentation</td>
<td>YOU</td>
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What’s animation?
Why take this course?
Applications

Privates of the Caribbean – At world’s end. 2007.
Industrial Light & Magic
Applications

God of War III (PS3). 2011. SONY Computer Entertainment
Applications

Virtual Cardiac Surgery
Applications

Virtual Fitting Room. 2011. Styku LLC.
Research Topics
Research Topics
Research Topics: 1D

Lena Petrovic, Mark Henne, John Anderson, Pixar Technical Memo #06-08.
Research Topics: 2D

Research Topics: 2D

Nonlinear Hinge vs. Cubic Shells
Falling Tubes

Cubic Shells. 2007.
Research Topics: 3D

Dragon
Solid Tetrahedral Mesh
74K Elements

Multi-Resolution Isotropic Strain Limiting. 2010.
Huamin Wang, Ravi Ramamoorthi and James O'Brien, SIGGRAPH Asia 2010.
Research Topics: 3D

Research Topics: 3D

Wrinkled Flames and Cellular Patterns. 2007.
Research Topics: 3D

Range of Materials

Research Topics: collision

Research Topics: fracturing

Research Topics: sound

Changxi Zheng and Doug L. James. ACM SIGGRAPH 2011.