Computer Science 881.005
Technical Foundations of Character Animation
Spring 2013
Syllabus

Instructor

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Office hours: by appointment
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Course Topics

Virtual characters are a substantial part of movies and digital games. Character animation is also a very active research area and new methods and more powerful algorithms are developed each year. This course introduce students to the state of the art in character animation. Our focus is going to be on 3D animation but many techniques can also be applied to 2D animation. Students will learn what computations are behind standard techniques, such as inverse kinematics, implement algorithms, read and discuss research papers, and develop and implement their own project.

Topics for the course include:

- motion editing
- interpolation
- inverse kinematics
- motion capture
- motion graphs and motion trees
- rigging/skinning
- physically based character animation
- faces
- gestures and hands
- perception
- crowds and behavior

Class Meeting Times

MWF 1:25-2:15, McAdams 123/133
Students are expected to wait for 15 minutes after the beginning of class before leaving if the instructor is late.

Textbook

Rick Parent, *Computer Animation: Algorithms and Techniques - Third Edition*, Morgan Kaufmann, 2012.

Grading

Final grades will be mostly based on assignments, a paper presentation, and your main project. Class participation is required and includes contribution to class discussion, engagement, and attitude.

Assignments	20%
Project	25%
Paper Presentation	20%
Paper Discussions	10%
Participation	10%
Final	15%

Letter grades will be based on a 100-point scale. These ranges may be changed somewhat, but only to your advantage.

Assignments

There will be two programming assignments. In this course you will learn to use the widespread game engine Unity.

- **Source Files** For each assignment, you will be notified on the method for submitting source files, if required.
- **Late Work** Late assignments will be accepted with penalty deemed appropriate (10%/day).
- **Independent/Team Work** You must work on projects independently, unless specifically authorized to work in teams. Cheating of any kind will not be tolerated and will result in significant penalties.

Project and Paper Presentation

Each student will choose a project within the course topics in agreement with the instructor. Also, each student will be required to give a 20 minute presentation on selected research articles. It is recommended to select both the project and the presentation on a related topic.