

CSE682 - Computer Animation

Rick Parent

DL787

parent@cse.ohio-state.edu

292-0055

Tentative office hours:

T 1:30-2:30; F 1:30-3:30



Animation

Animating – Making something appear to move that doesn't move itself

Procedural Animation is Emphasized

Motion Control Techniques and Algorithms

Producing animation:

Aesthetics

Animation Production

Digital Post-Processing



Class: Wi '09

Eng. Majors: 13

MPS majors: 5

Grads: 5

All CS majors



Some Alumni

Beth Hofer, M.S. – PDI

Kirk Bowers, B.S. – Disney

Mark Fontana, B.S. – Pixar

Kevin Rogers , M.S. – PDI

Saty Ragavachara, M.S. –
Imageworks

Brad Winemiller, B.S. – Pixar

Steve Anderson, M.S. – Electronic
Arts

Doug Roble, Ph.D. – Digital Domain

Dave Haumann , Ph.D. – Pixar

Ferdi Scheepers , Ph.D. – Pixar

Rob Rosenblum, M.S. – PDI

Nathan Loofbourrow, M.S. – PDI

Steve May , Ph.D. – Pixar

Brent Watkins, M.S. – Pixar



The Class

In-Class

Lectures

Videos

Project reports

Grading

Homeworks – MEL exercises

Midterm – lightweight

Final – lightweight

Project documentation

Project



Lectures

Background

Perception

Conventional Animation,
History,

Video Production

Background Math

Low-Level Control

Interpolation

Speed control along a path
path following

High-Level Algorithms

Forward/inverse kinematics

Physical simulation

Flocking

Particle Systems

Natural Phenomena

Plants

Water

Clouds

Fire

The Human Form

Reaching

Walking

Hair



Videos

Previous Animations from Class

Conventional Animation (e.g. Disney)

Historic Computer Animation

Recent Computer Animations



Student Animation Project

Vignette

Short action sequence

Part of a story

Use a procedural model

Composition

Camera control

Lighting



Project Groups

Groups: 3-4, mix backgrounds

Design and present storyboard

Give progress reports

Present final project



Student Presentations

Rough Storyboard

Storyboard (revised)

Detailed Storyboard and sample stills

Sample stills and low-quality rendering of sequences

Finished sequence (finals week)



Storyboard



Class Software

Maya

scripting (MEL)

C++ API



Hardware Facilities

CL112D

10 Maya licenses

Hope to have 5-6 Premier licenses



Motion Specification and Control

Techniques: Aids to user

Interpolation
Path following
Keyframing
Languages
Morphing

Figure animation

Reaching, Walking
Facial animation
Clothes
Hair
Skin

Algorithms: Procedures

Inverse kinematics
Physics of rigid bodies
Flexible bodies
Particle systems
Flocking
Autonomous Behavior

Natural phenomena

Plants
Water
Clouds
Fire



Technical Groups

Technical group – learn one major facet of software

Each technical group

At least one person from each project group

Technical groups

- **Modeling:** polygons, NURBS, subdivision surfaces
- **Animation:** Forward kinematics, IK, particle systems
- **Rendering:** playblast, rendering qualities, recording frames, video editing, post-processing



Immediate Tasks

Form into groups

Start thinking of animation project

Consider software tasks



By End of Week

Form groups
4-5 CSE students

At the end of Wednesday's class, anyone not in a group will be put into one

Have an idea of technical group assignment

