

# CS 294-13 Advanced Computer Graphics

## Introduction and Administivia

James F. O'Brien

Associate Professor  
U.C. Berkeley

## Instructors

- Prof. James O'Brien

- Geometric modeling
- Surface reconstruction
- Simulation of physical systems
- Motion capture
- Computer animation



- Prof. Ravi Ramamoorthi

- Other things that are also quite interesting



See webpages for office hours and contact info.

## Topics

- Introduction to Basic Ray Tracing and BRDFs
- Global Illumination and Monte Carlo Rendering
- Recent Developments in Fast Offline Rendering
- Image-Based and Real-Time Rendering
- Data-Driven Methods
- Signal-processing and low-dimensional and data-sparse methods
- Imaging and Computational Photography
- Basic Geometric Concepts
- Meshes and Subdivision Surfaces
- Finite Elements and Numerical Integration for Animation
- Fluid Simulation and Reduced Order Models
- Inverse Kinematics
- Rigid Body Dynamics

## Lectures

- Lectures covering course topics
  - We'll attempt to post notes/slides beforehand
  - Designated scribe for each lecture
- Interactivity is important
  - It makes the class a lot more fun/interesting
  - If you don't ask questions and comment, you might as well get an online degree
  - If we get bored we might amuse ourselves by giving you quizzes

## Class Website

- Webpage with description of class is at **`www-inst.cs.berkeley.edu/~cs294-13`**
- Handouts, notes, slides, etc. will be posted there
- Class roster

## Mailing List

- Mailing list used for group discussion  
**`cs294-obrien@lists.eecs.berkeley.edu`**
- To sign up
  - Send message to **`sympa@lists.eecs.berkeley.edu`**
  - For the subject line enter **`subscribe NameOfTheList`**
  - Leave body empty
  - **`NameOfTheList`** should be "cs294-obrien" (without the quotes)
  - Send the message from your desired receiving account
  - Look for confirmation message
- You must sign up or else you'll not be signed up

## Roster Page

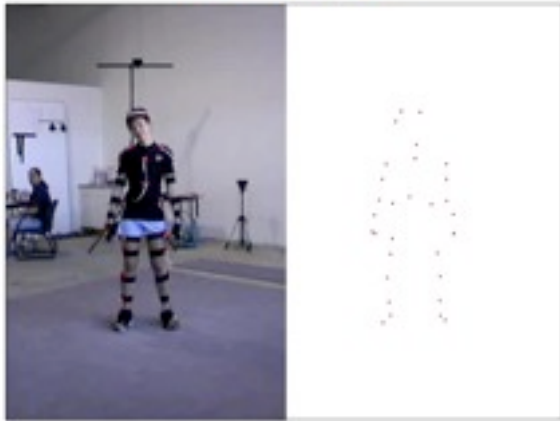
- Send email to [cs294-13@mail.eecs.berkeley.edu](mailto:cs294-13@mail.eecs.berkeley.edu)
  - Subject is "Roster page setup"
  - Body contains exactly the following lines
    - Your Name
    - Grad/undergrad in what department
    - Your email address
    - URL for your home page
    - URL for a picture of you (200 w x 300 h)
    - A blurb about you up to 5 lines long
  - This will be processed by a script. Please follow instructions exactly.
- This is not optional

## Assignments

- Four assignments
  - Assignment 1: Monte Carlo rendering
  - Assignment 2: Real-Time or Image-Based rendering
  - Assignment 3&4: Prof. Ramamoorthi is more organized than Prof. O'Brien
- Done individually or in groups of two
- Ask about substituting a research project for one or two of the assignments

# My Research Interests

## Motion Capture



# My Research Interests

## Motion Capture



# My Research Interests

## Surface Construction



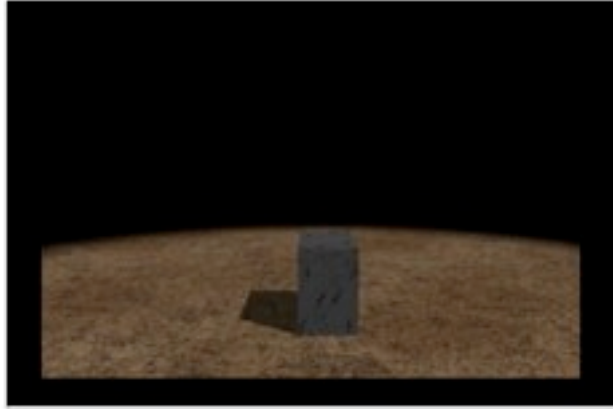
# My Research Interests

## Surface Construction



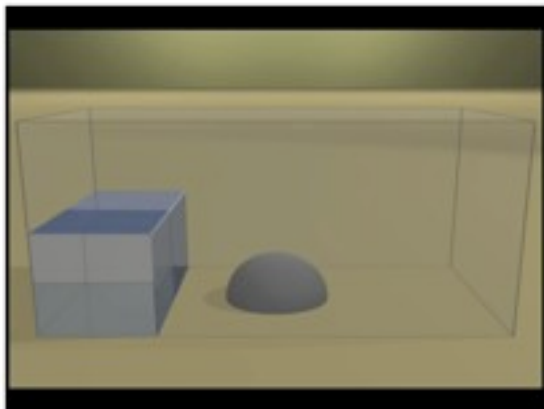
## My Research Interests

Explosions



## My Research Interests

Fluid Simulation and Surface Tracking



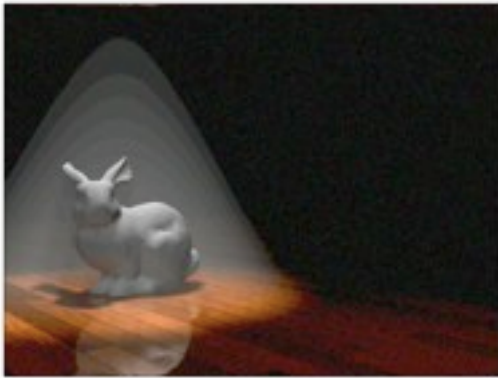
## My Research Interests

Viscoelastic Fluids  
(aka Goop)



## My Research Interests

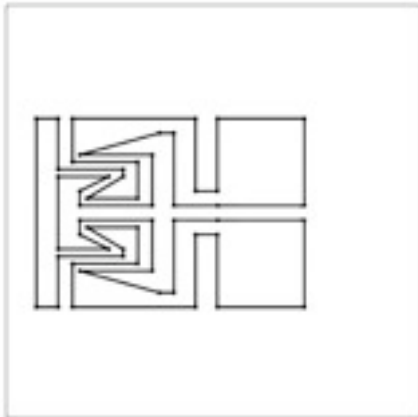
Fracture





## My Research Interests

Things with No Clear Utility



## My Research Interests

Video Games

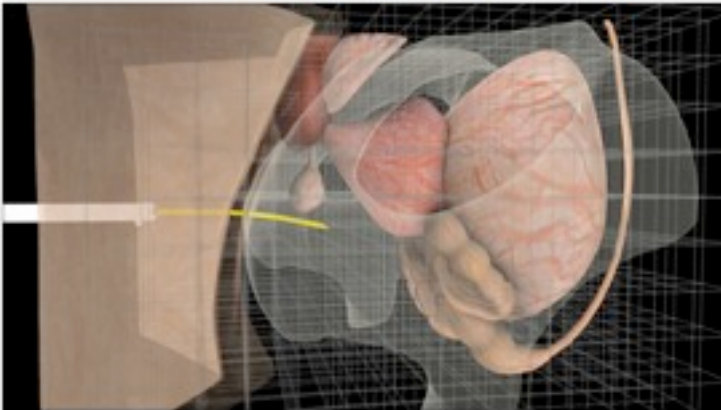


## My Research Interests

Surgical Simulation

## My Research Interests

Surgical Simulation



## My Research Interests

**See webpage for more stuff...**

