

Welcome to CS559!

Introduction to Computer Graphics

Spring Semester 2017

Brief answers to most pressing questions ...

- What about the class waitlist?
- Where do I find information about the class?

<http://graphics.cs.wisc.edu/WP/cs559-sp2017/>

- How do I communicate with you?

Email : cs559.s2017@gmail.com

Today's lecture

- Discuss scope of class, and indicative topics
- Clarify class logistics
 - Communication mechanisms
 - Assignments
 - Evaluation procedure
- A few details about your instructor
- Getting started with drawing & transforms

Scope

- What is the class about?
 - How is computer-imagery created?
 - What are the building blocks we use? (triangles, points, etc)
 - Acquiring graphics *programming* experience
 - Textures, curves, color, etc ...
- Who is this class for?
 - Undergraduates excited about graphics & images
 - Prerequisite : being willing to learn to code in Javascript!
 - We'll cover the linear algebra basics - some familiarity is useful
- Enthusiasm a must!

Website

- Your main source of information
 - Class webpage : graphics.cs.wisc.edu/WP/cs559-sp2017
- Other support resources
 - Class discussion : Piazza
 - Quizzes/Assignments : Canvas
- EMAIL : cs559.s2017@gmail.com
 - Be aware of communication policy ... use Piazza when possible!
- Evaluation
 - Regular quizzes (keyed to reading assignments, every 1-2 weeks)
 - (Mostly weekly) programming assignments (most important)
 - Midterm & final exam

Evaluation

- Details on “Syllabus” Page
 - graphics.cs.wisc.edu/WP/cs559-sp2017/Syllabus
- All three components of the class are important!
- Programming scores provide a Baseline
- Quizzes/Exams modify this baseline
- Grading on a curve, but you are guaranteed a “B” if :
 - Adequate performance on programs (“Check” on all)
 - Almost all quizzes correct
 - Respectable performance on exams (\geq “BC”)

Outcomes

- Historically, what have students gotten from 559?
 - Graphics theory and principles
 - Concepts and practice of graphics programming
 - Experience with *nontrivial* programming, at large

Expectations

- Math & Linear Algebra
 - Requirements more relaxed than before
 - We'll fill in the blanks where necessary
 - Focus on abstractions
- Programming (!!)
 - You will learn a (new?) language
 - Must use online resources (pointers are provided)
 - Must be willing to sharpen development skills
 - Debugging
 - Formalizing programmatic tasks

Communication policy

- Typical reply turnaround time?
(typically 24-48hrs but may delay until next lecture)
- Use Piazza whenever possible
(and make sure to sign up!)
- Announcements on Webpage
(you are responsible for monitoring it)
- For very rare occasions : broadcast via classlist
(compsci559-1-s17@lists.wisc.edu)

Early homework

- 2 programming assignments due next week
(one should be very easy)
- 1 quiz due next week (with reading assignment)

Special time constraints

- Midterm : Thursday March 2nd, 7:15-9:15pm
- Final : Thursday May 11th, 10:05am-12:05pm
- Special lecture arrangements (tentative)
 - Substitute instructor on Feb 7th, Feb 16th, Feb 23rd
 - Lecture of Thursday March 9th to be cancelled; a make-up lecture will be scheduled for Friday March 10th
- Lookout for a survey in next few days

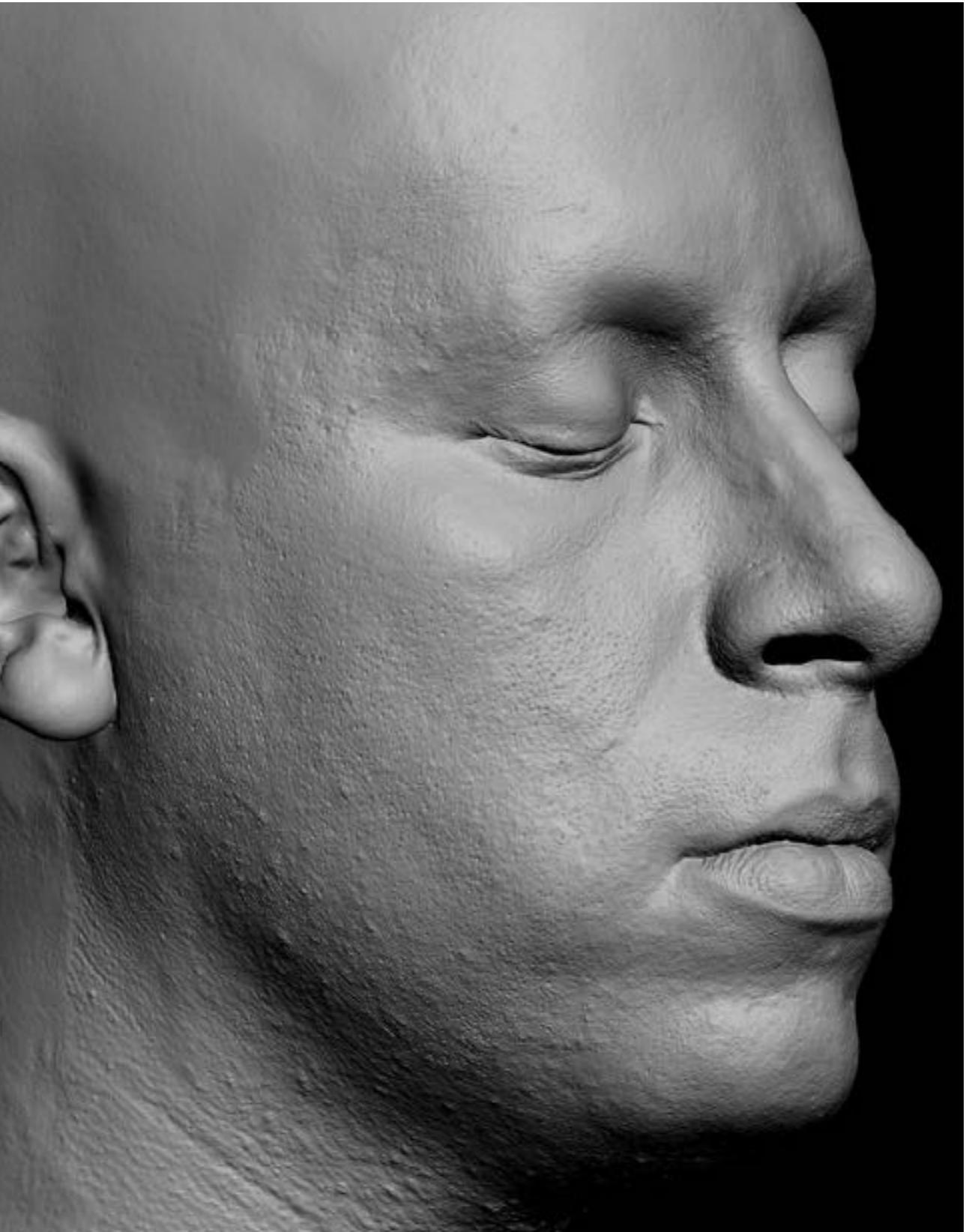
Office hours

- Instructor (Eftychios Sifakis)
 - Regular O/H :Tue 3:00-3:45pm
(Office CS6387; starting next week)
 - In-Class O/H :TBD - Once we get new classroom.
(Aiming for directly before or after class)
 - In-class sessions to focus on your questions
(otherwise will talk about programming practices)
- TA (Kevin Zhang)
 - Wednesdays 2:30-3:30pm, Thursdays 1:00-2:00pm
 - Office TBD - In meantime, meet in Graphics Lab (CS1346)

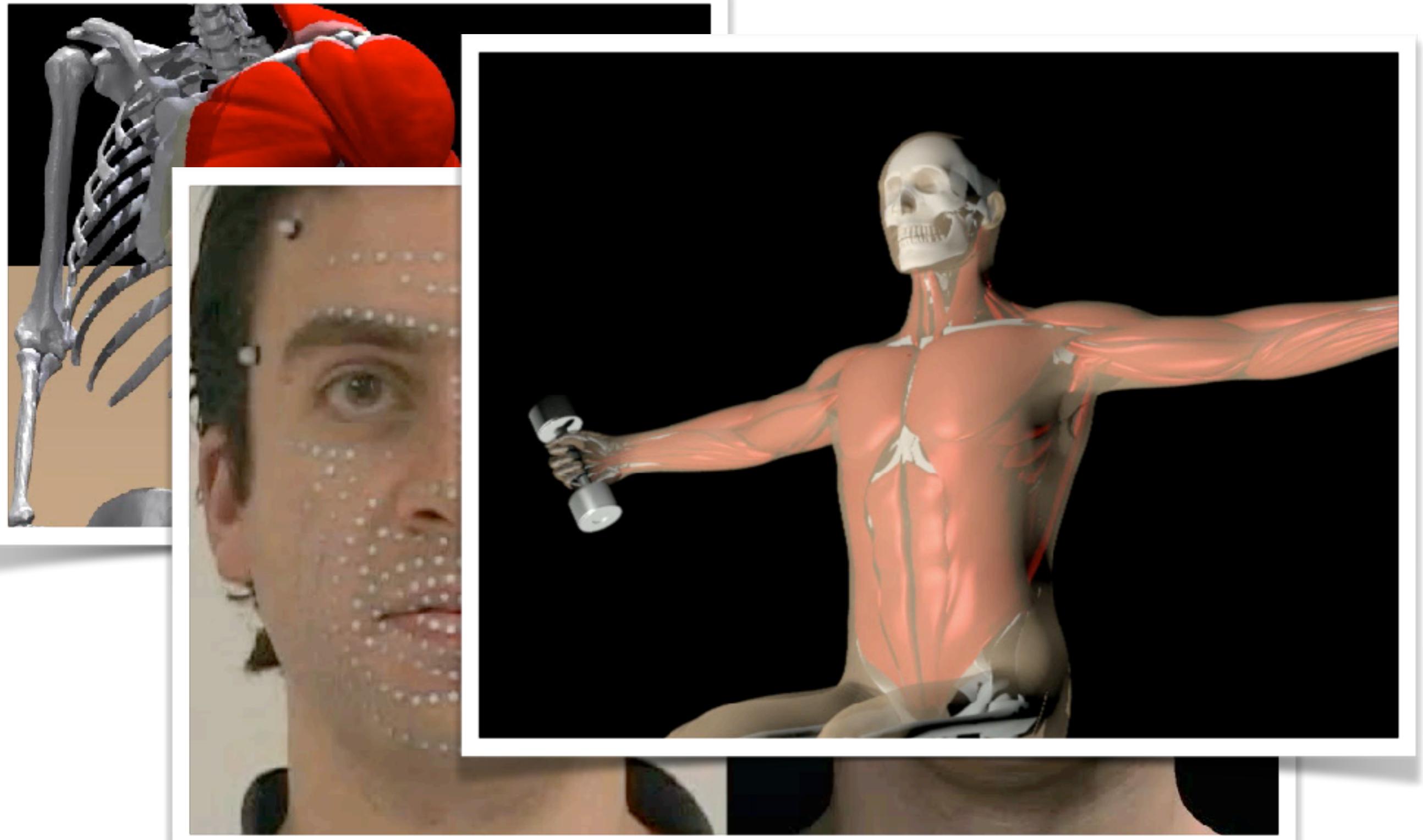
About your instructor ...

Research interests:

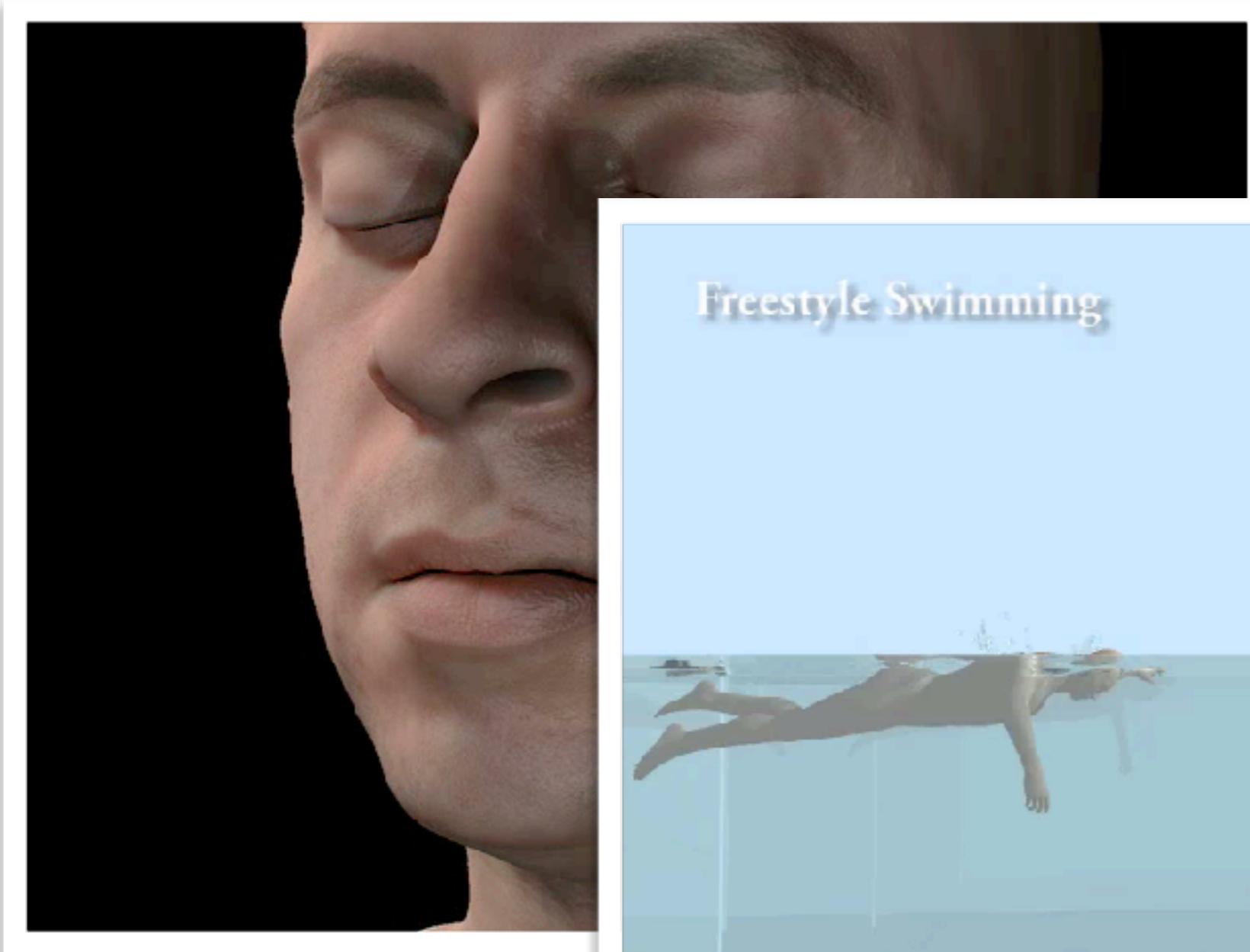
- Physics-based modeling
- Digital humans
- Simulated elastic objects
- Fluid animation
- Fracture & destruction
- Fast math in general



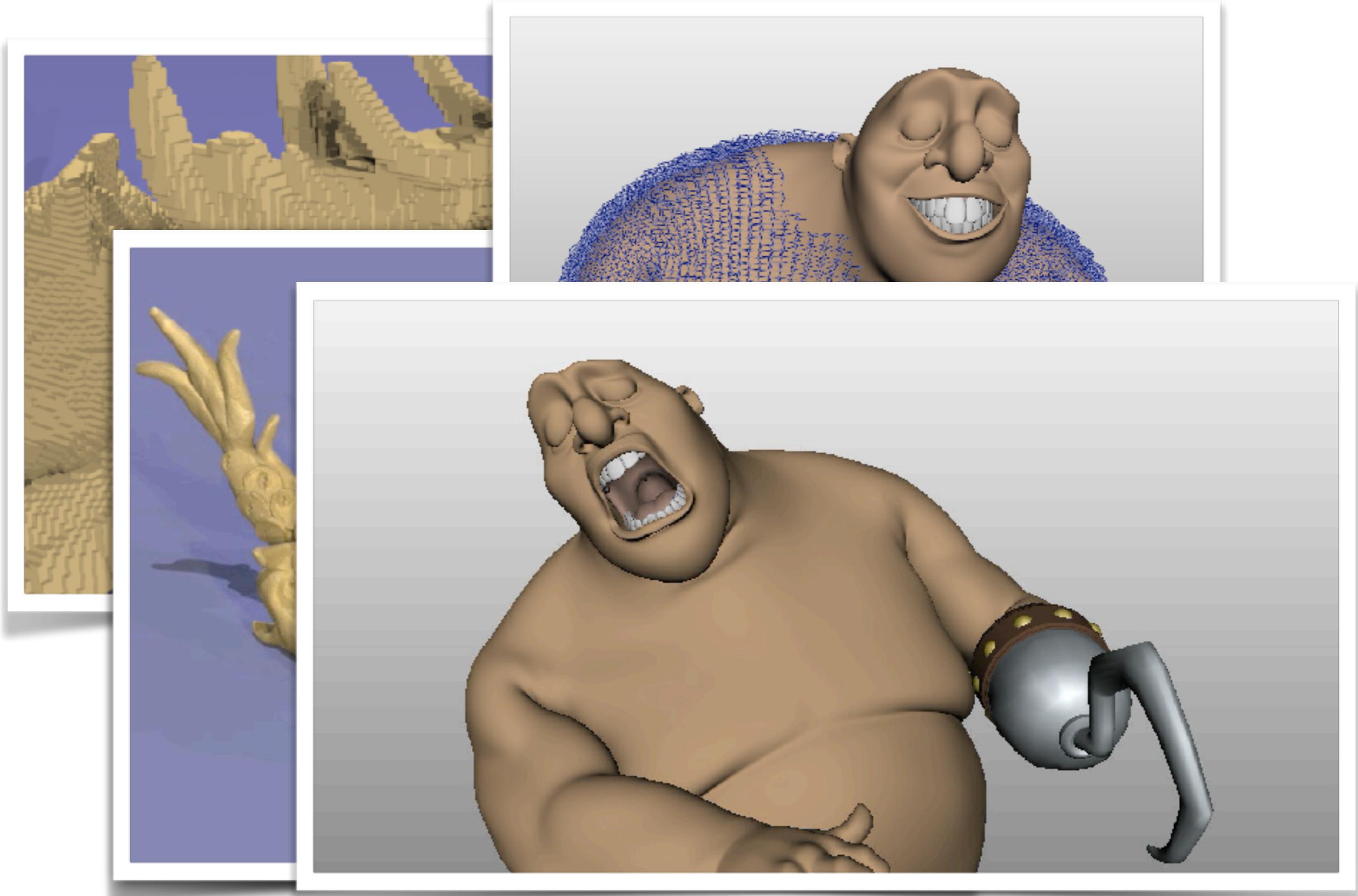
Animating models of human bodies



Detailed anatomy and complex environments



Jiggly deformable models & fast simulation



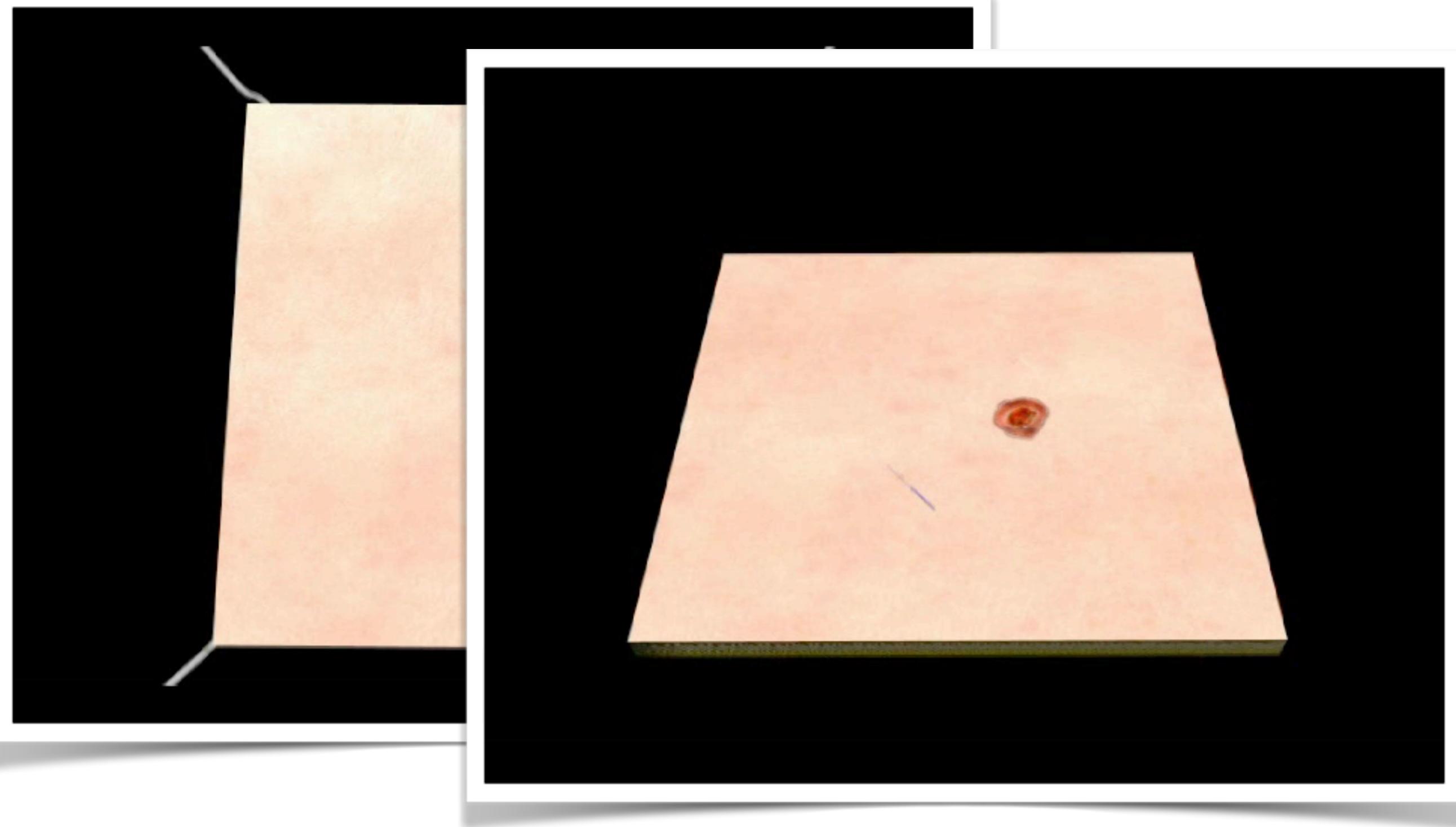
Hairy & messy collisions



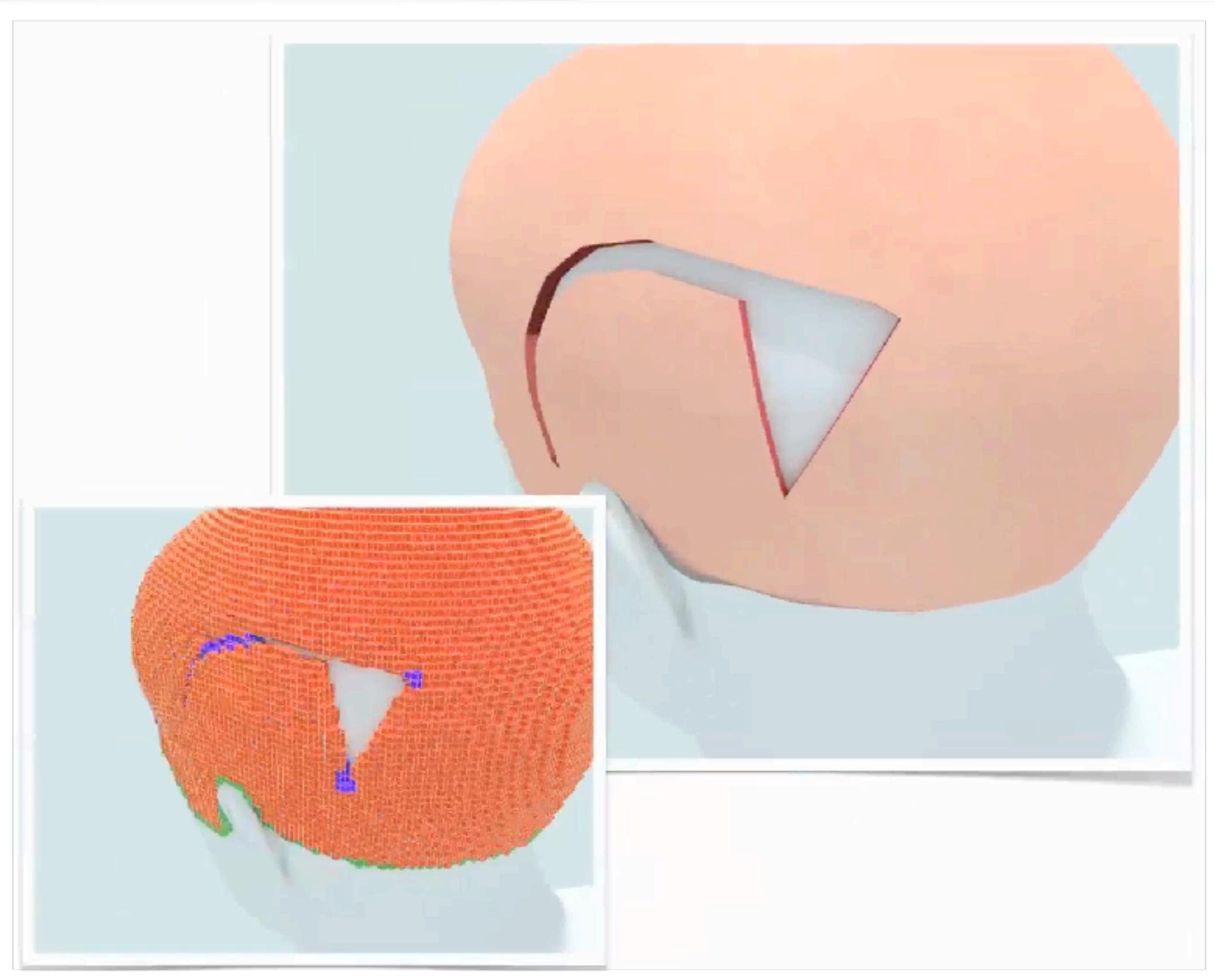
Fracture, destruction & mayhem



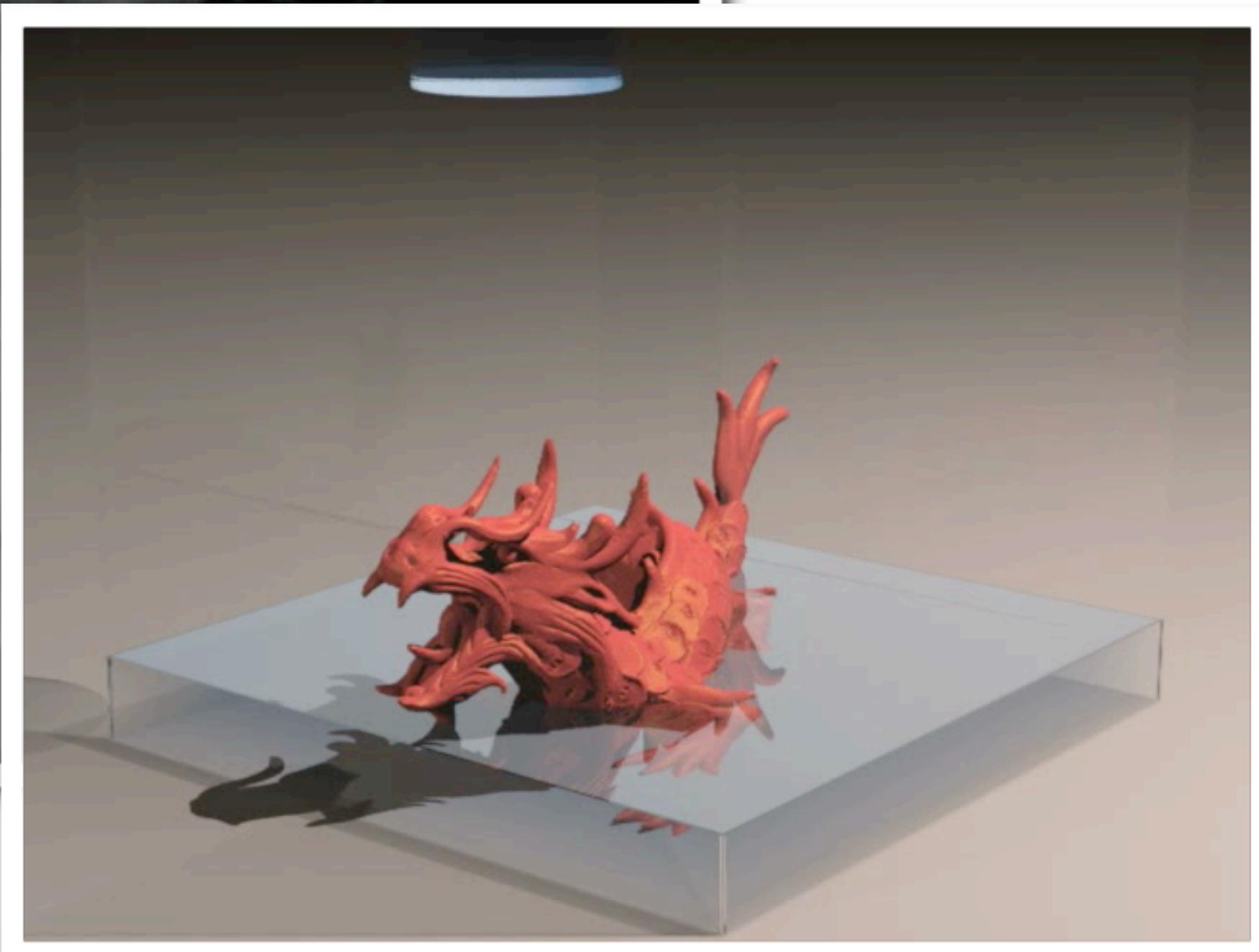
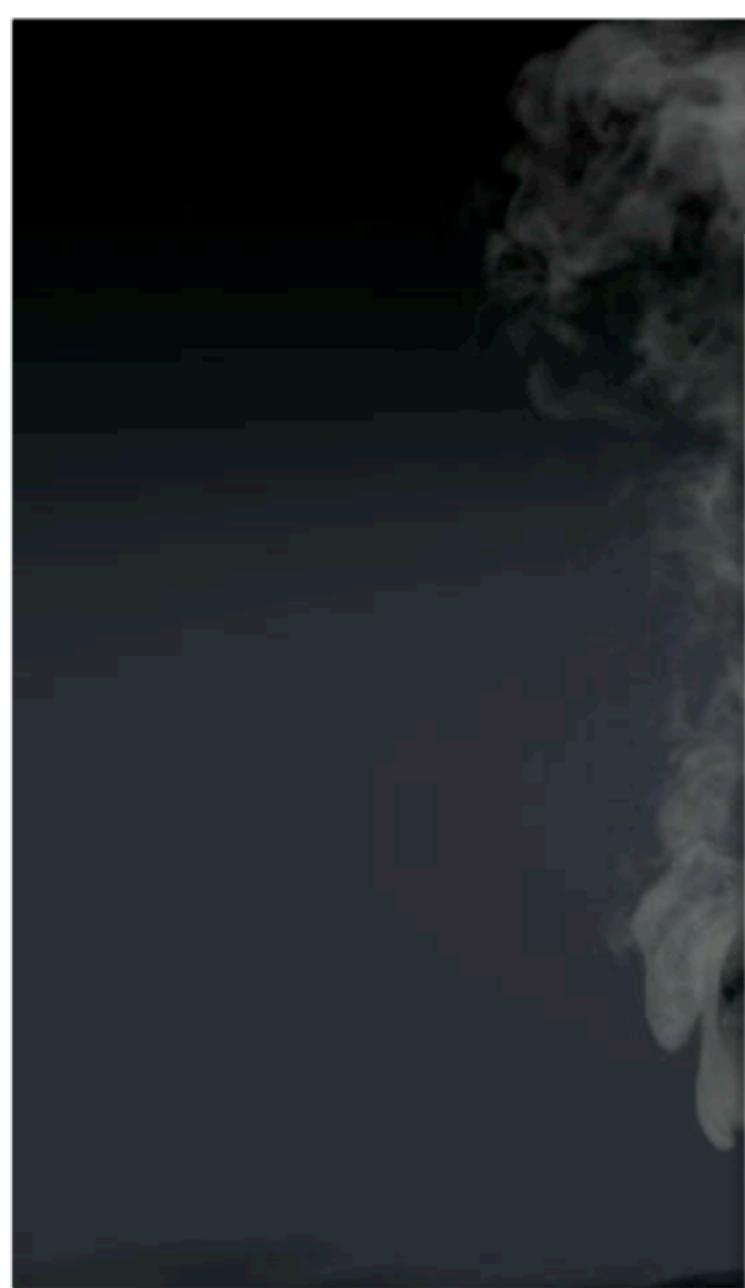
Clinical “skill simulators”



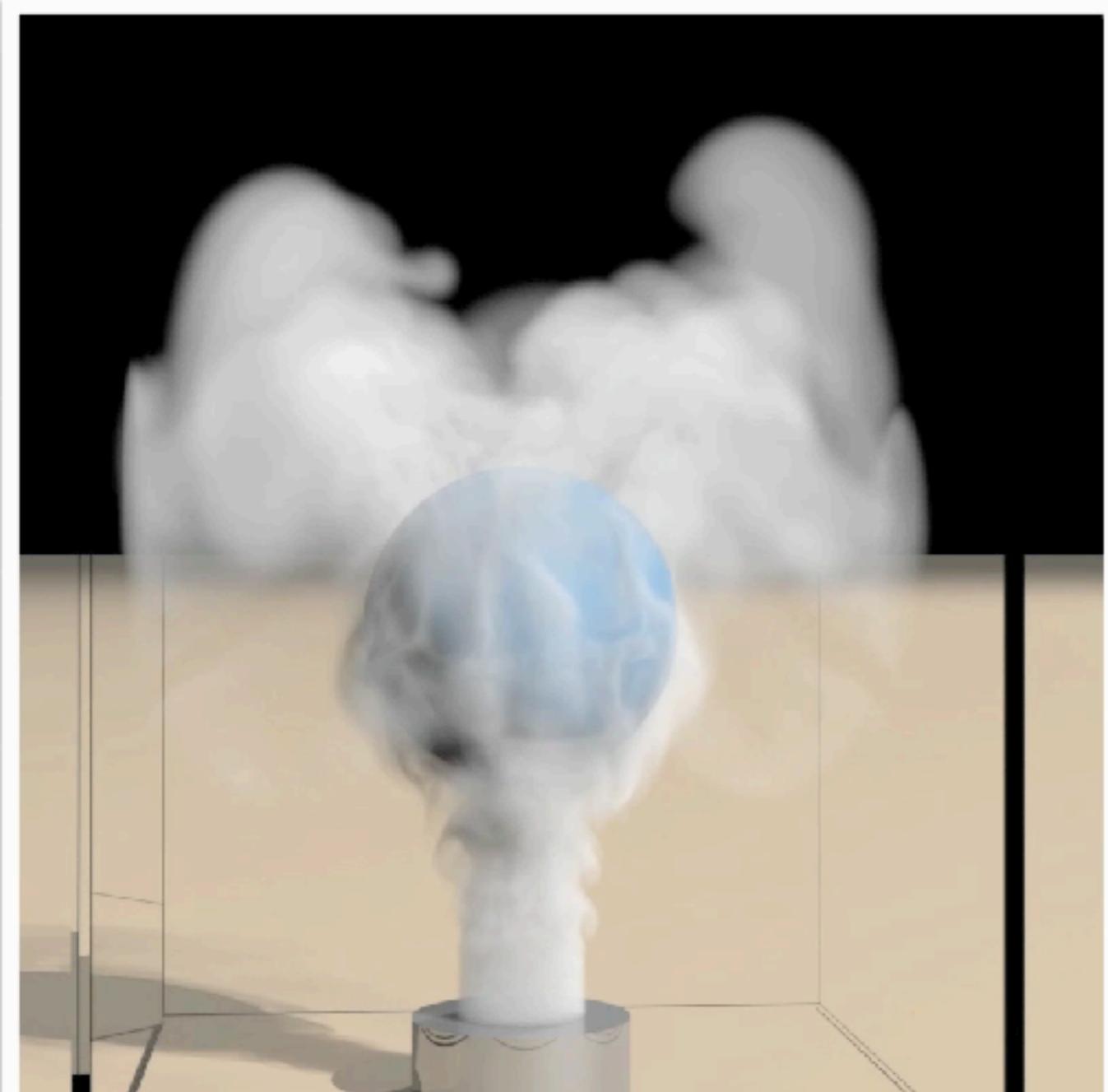
Clinical “skill simulators”



Smoke on the water



... and as much detail we can afford

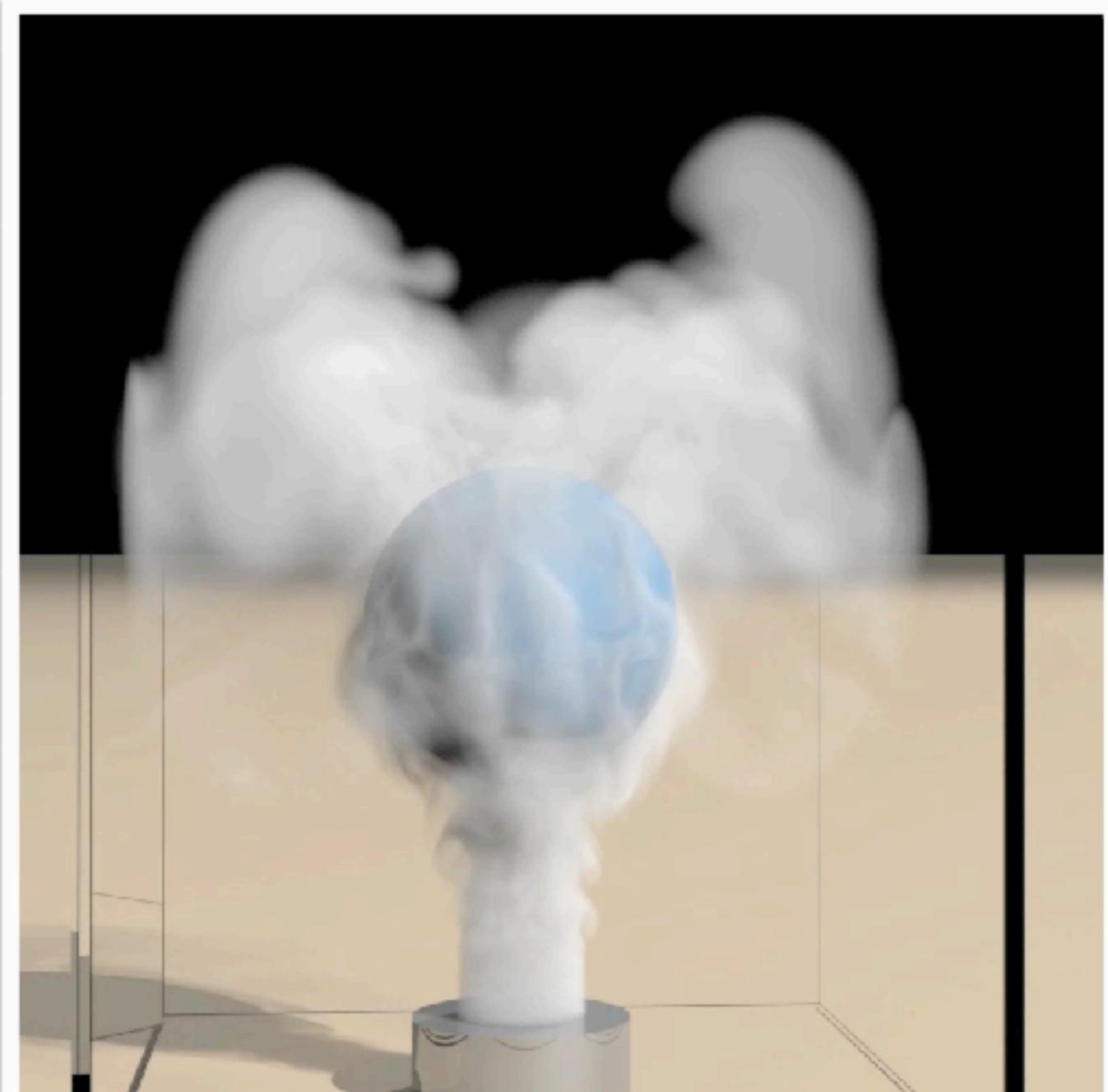


Smoke flow
past sphere

Effective
resolution:
 $1K \times 1K \times 2K$

135M active
voxels

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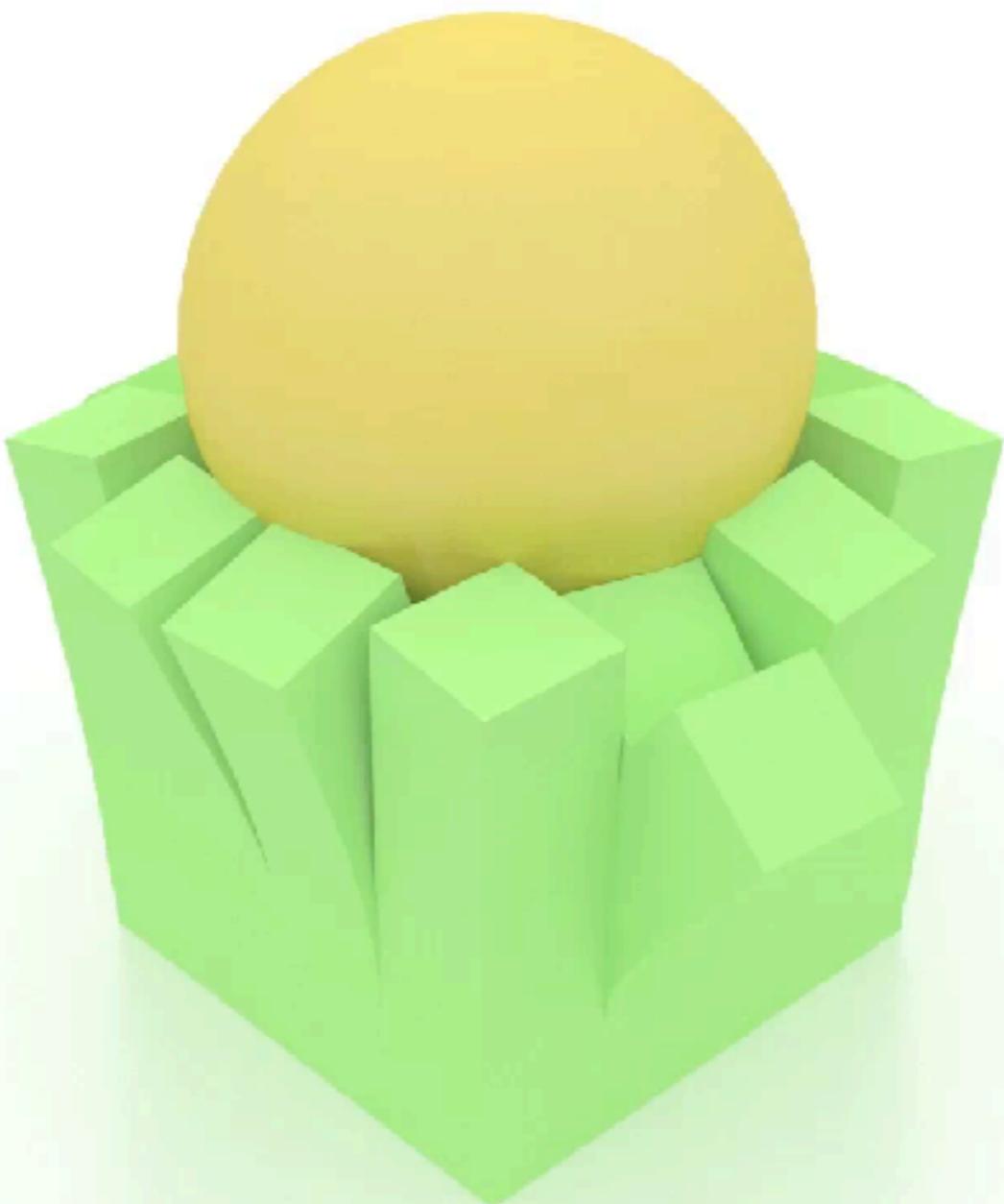


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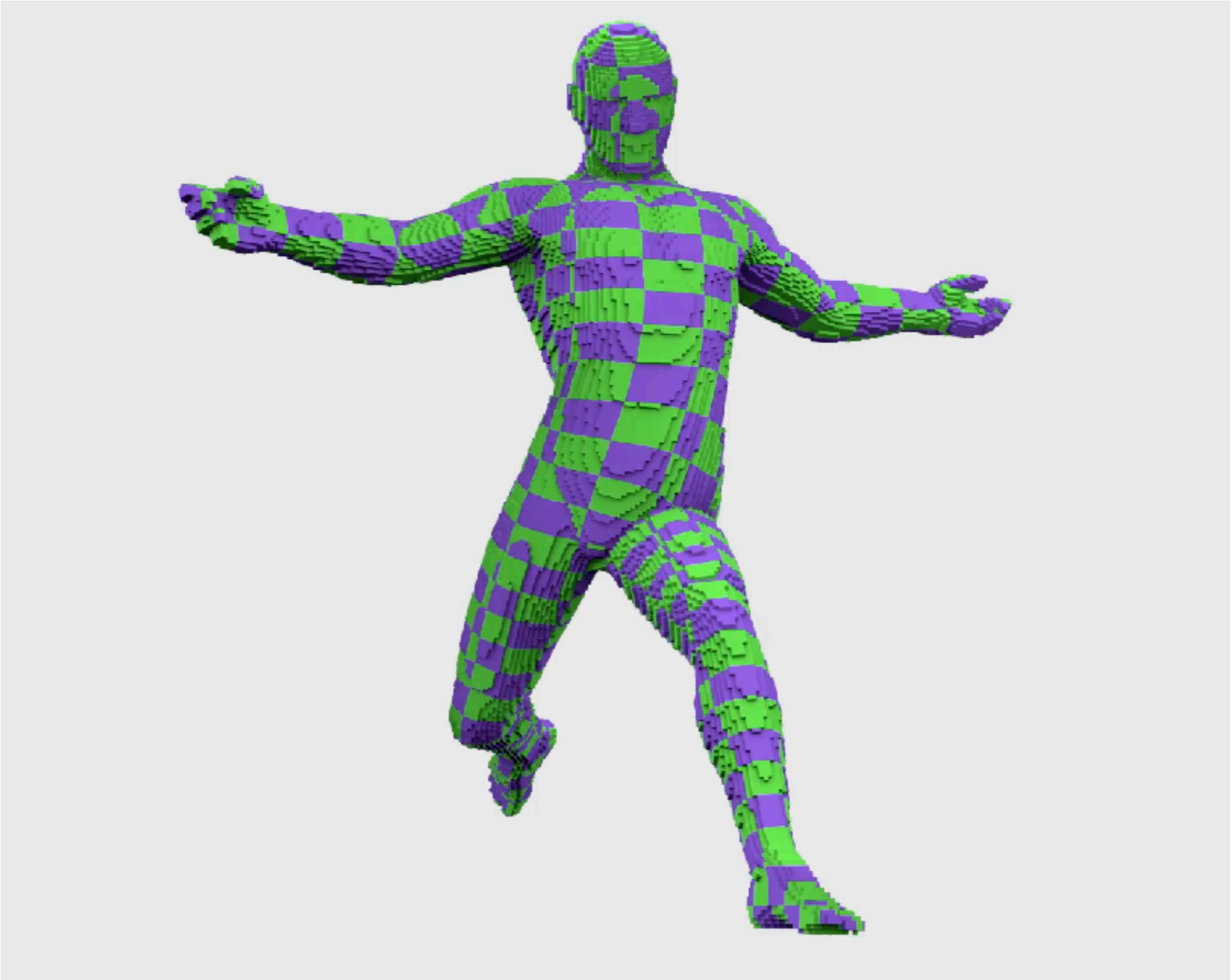
Effective
resolution:
 $1K \times 1K \times 2K$

135M active
voxels

Present-day stuff : Contact in fracture



Present-day stuff : Cache optimized skinning



Present-day stuff : Fluids on heterogeneous computers

