

Intro to Computer Graphics

CSE 457

Today

- Logistics
- Motivation, topics, projects
- Displays and framebuffers

Logistics

- Instructor:
 - Prof. Ira Kemelmacher-Shlizerman
- TAs:
 - Sonja Khan
 - Francis Ge
 - Menghong Chhay
- Webpage:
 - <http://courses.cs.washington.edu/courses/cse457/15au/>

Computer Graphics

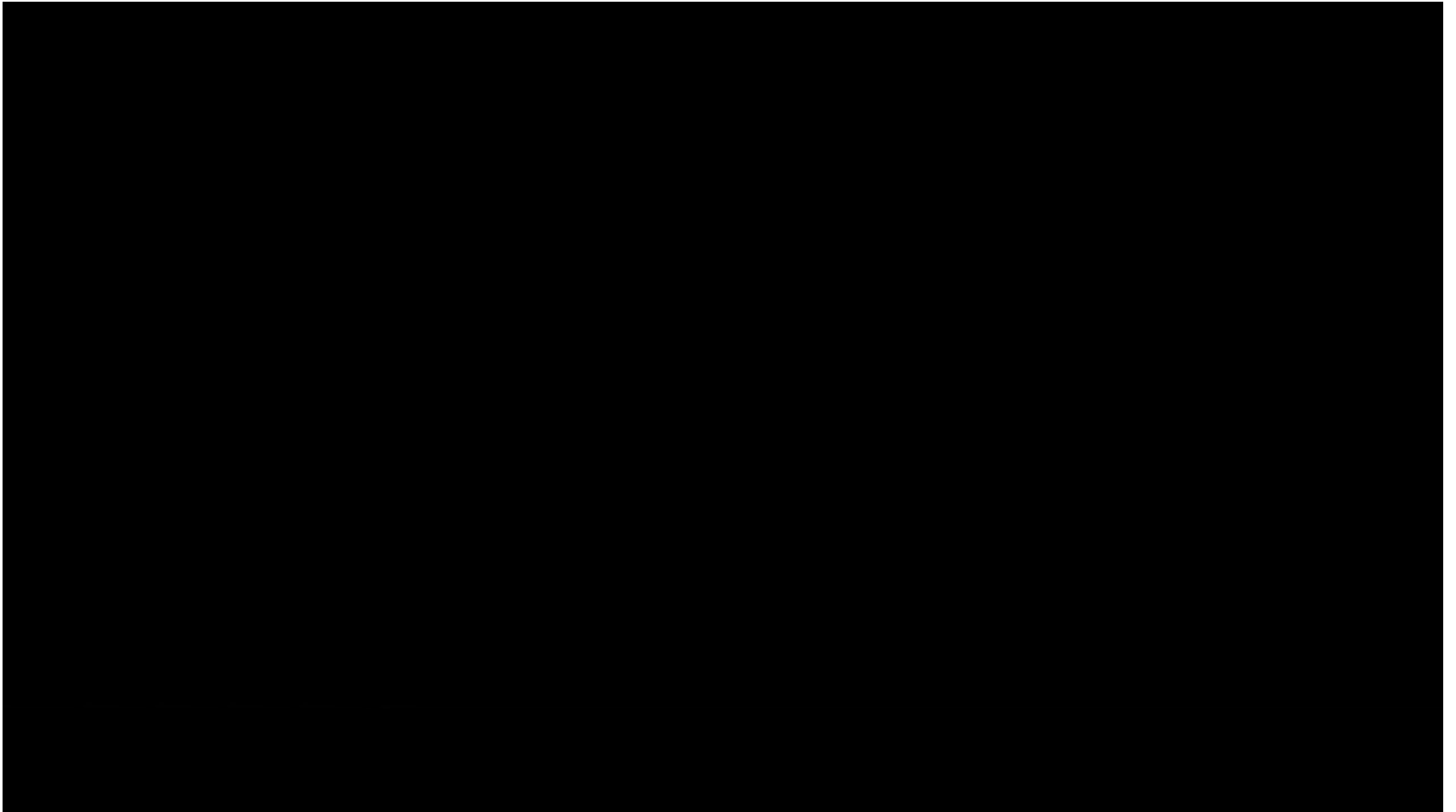






Texture
Lights
Cameras
Shading
Body and face model
Scene
env.
Story board
Animation

Face animation in movies



Facial animation in movies

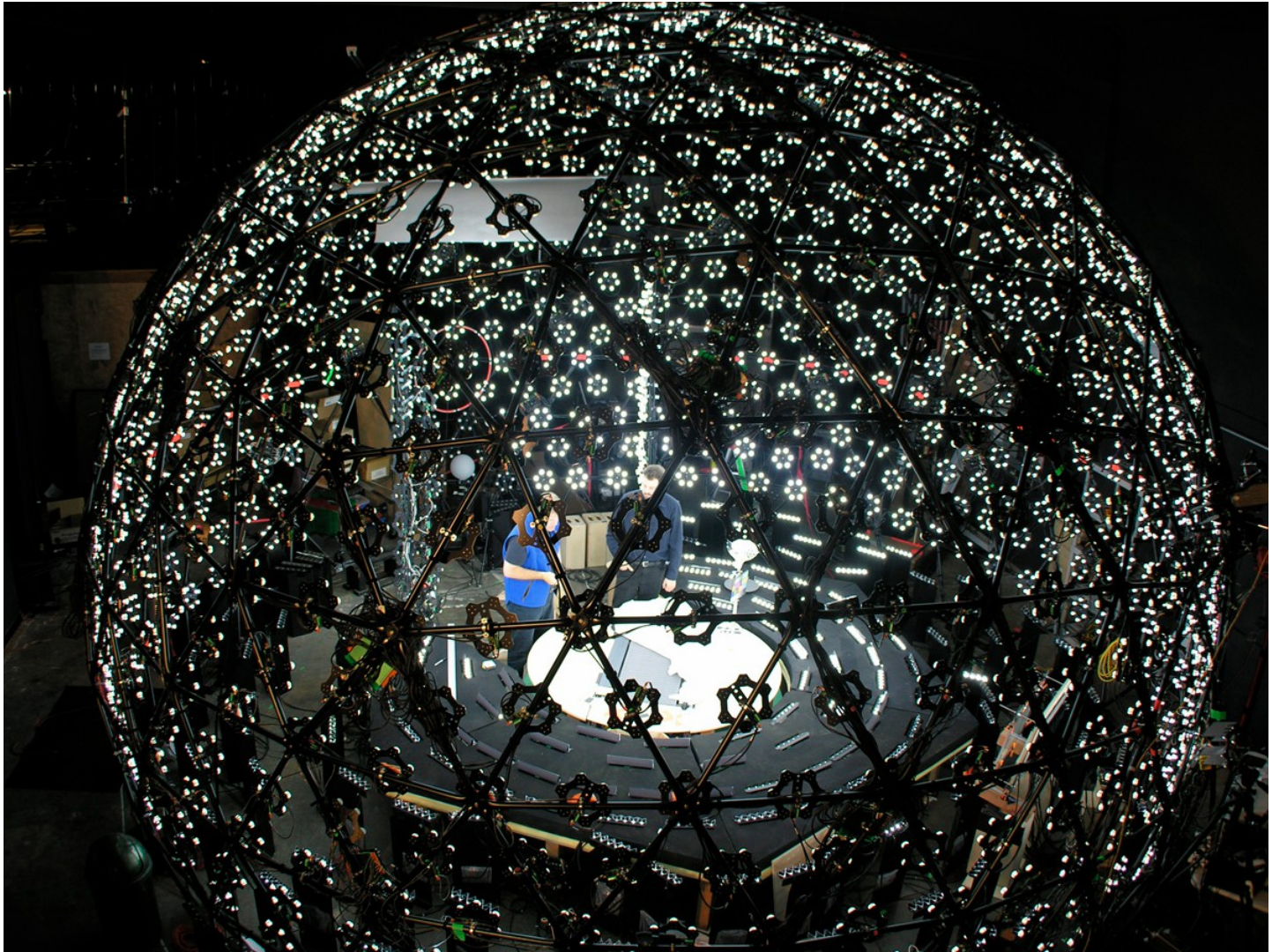


The Story of Benjamin Button

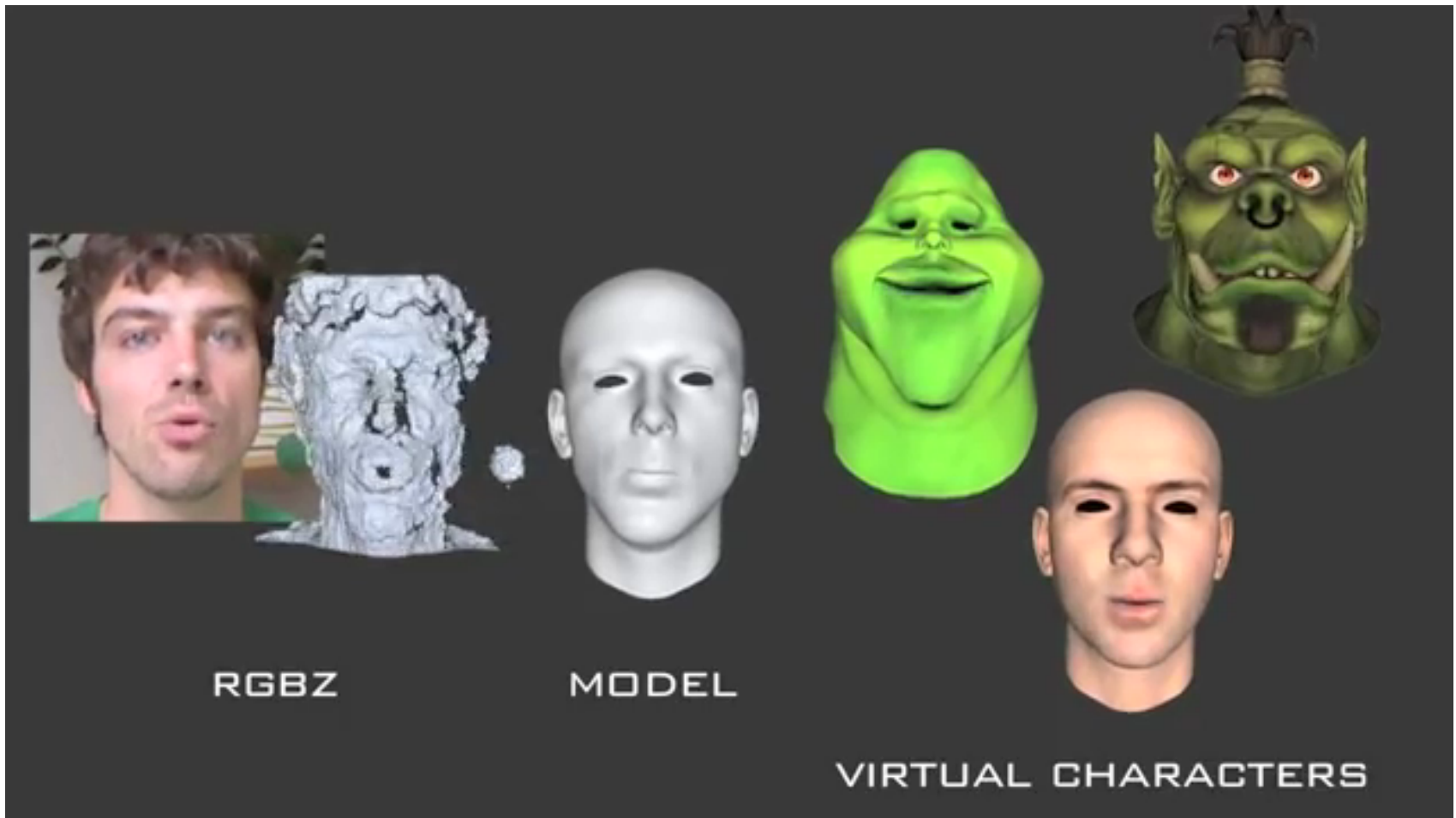
Digital Ira



Capturing facial shapes with Light Stage



Real time character puppeteering



FaceShift

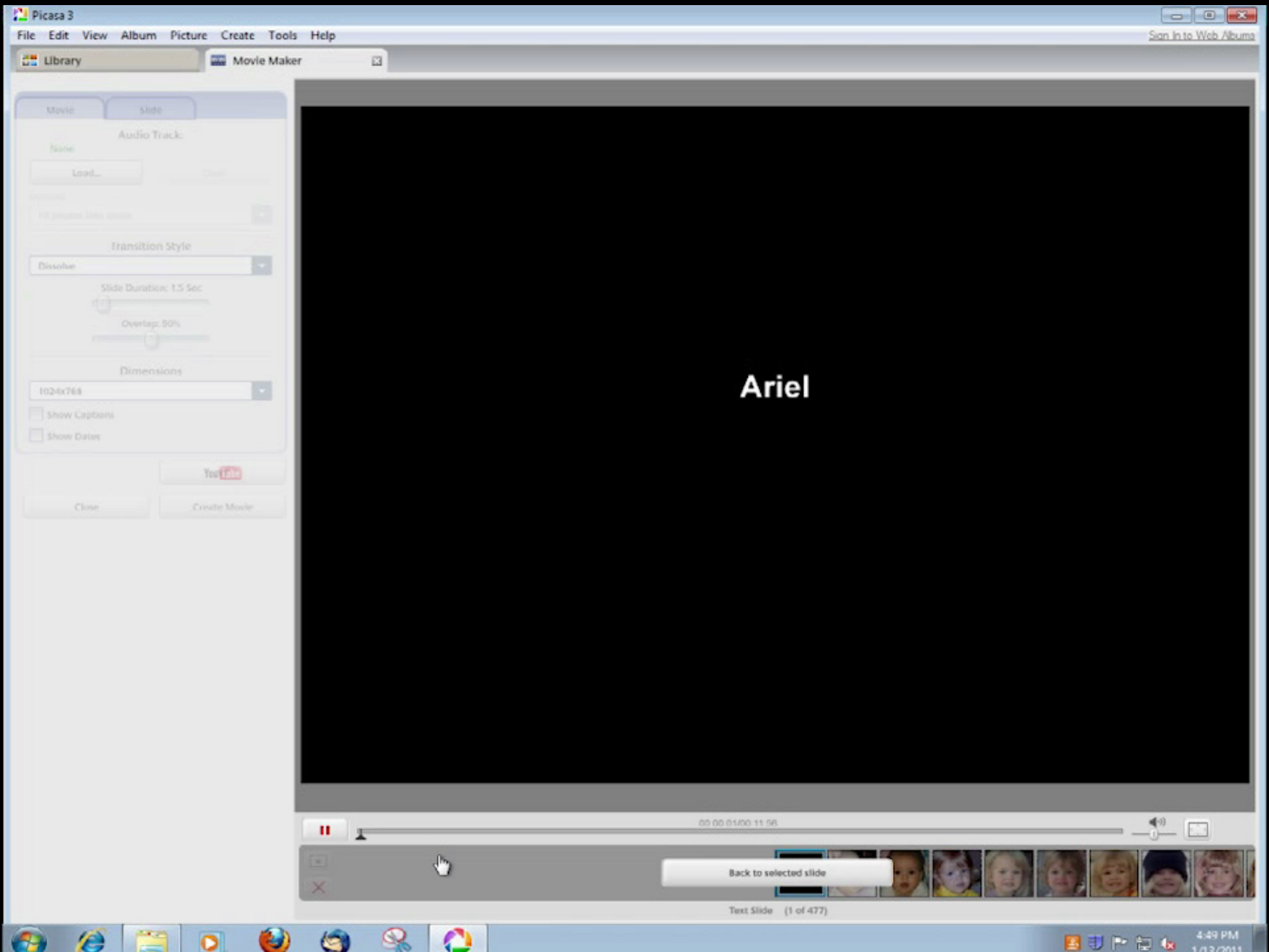
Virtual and Augmented Reality



Oculus
Facebook
Google



Magic Leap
Microsoft HoloLens



Part of Google's Picasa

Topics of our class

Displays

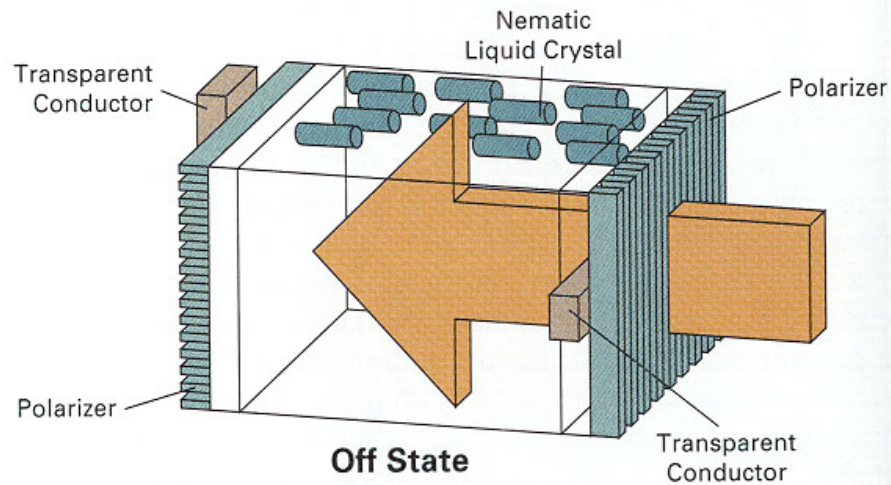
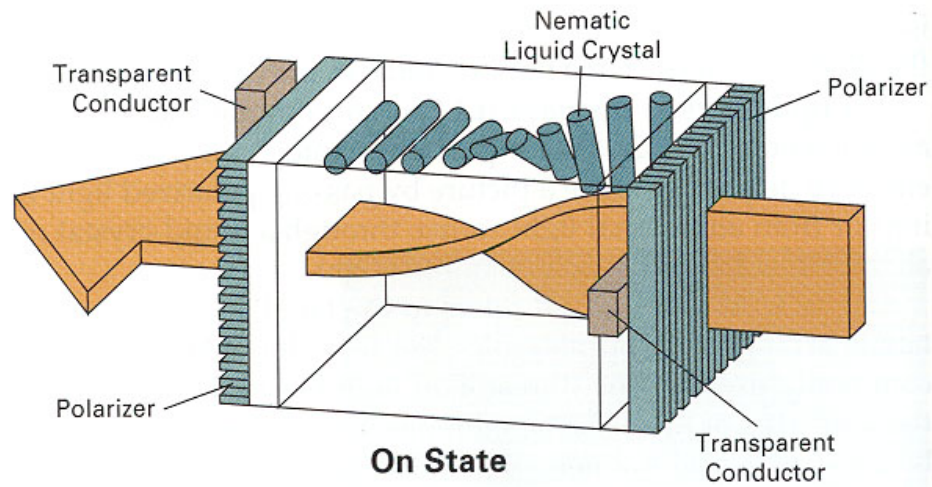


Image processing



Original



Smoothed



$S_x + 128$



$S_y + 128$



Magnitude

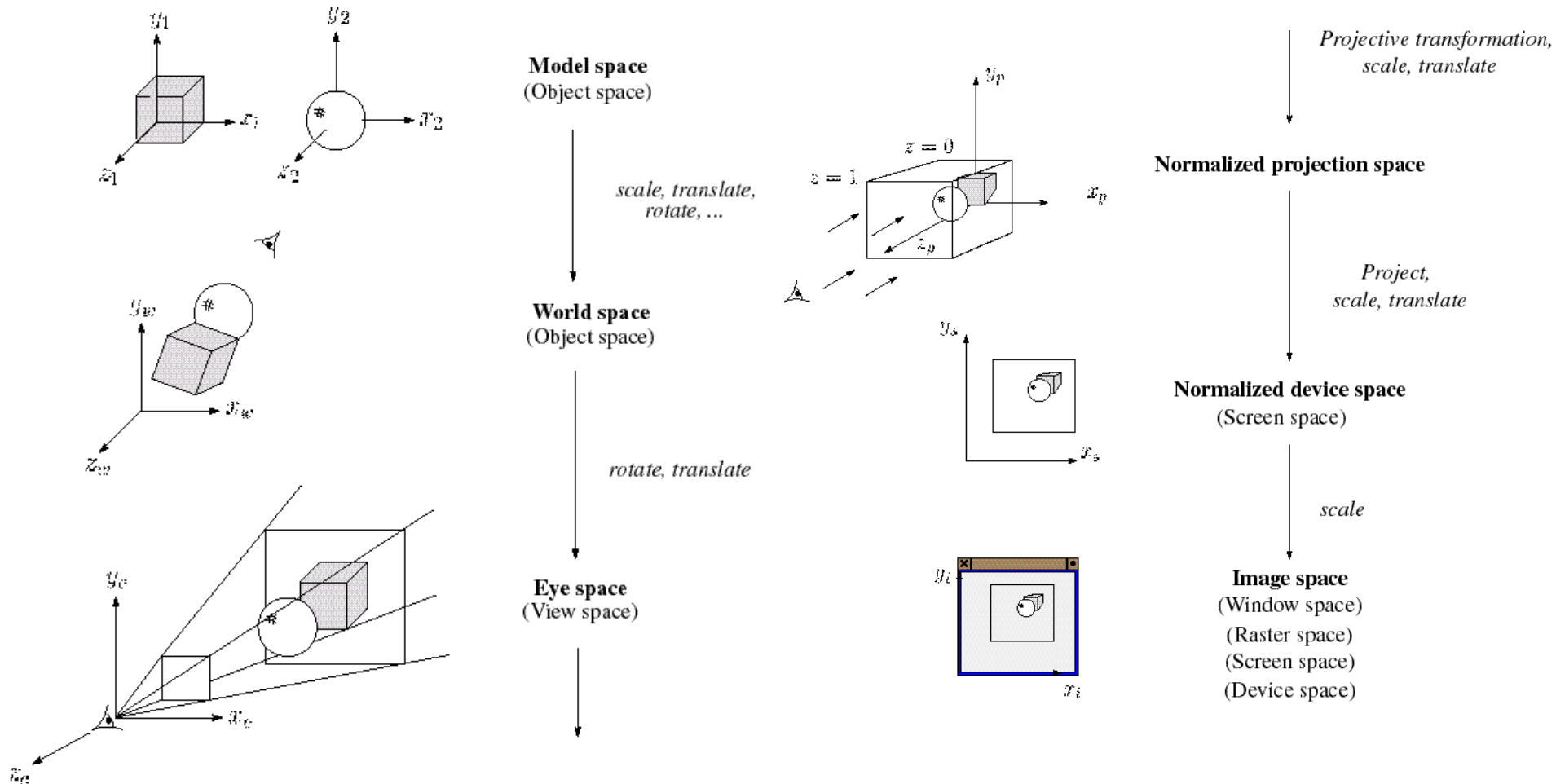


Threshold = 64

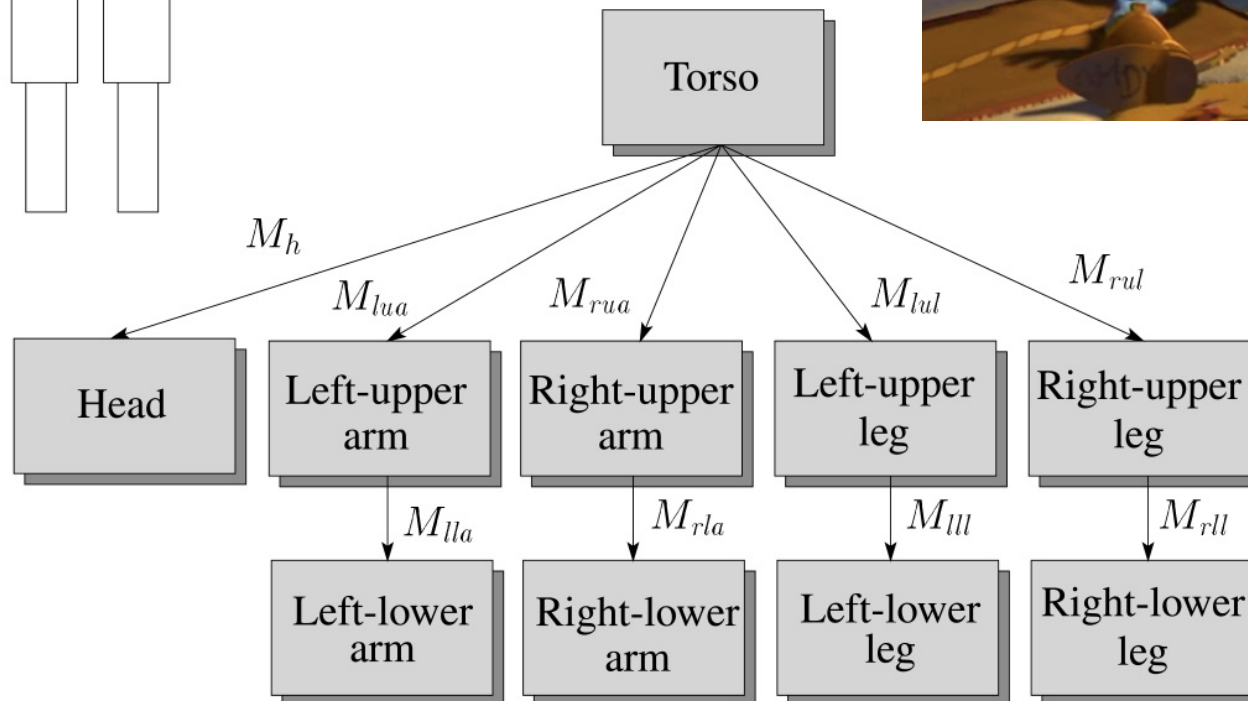
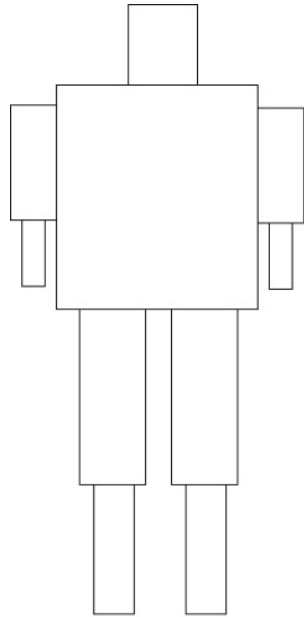


Threshold = 128

Geometric transformations



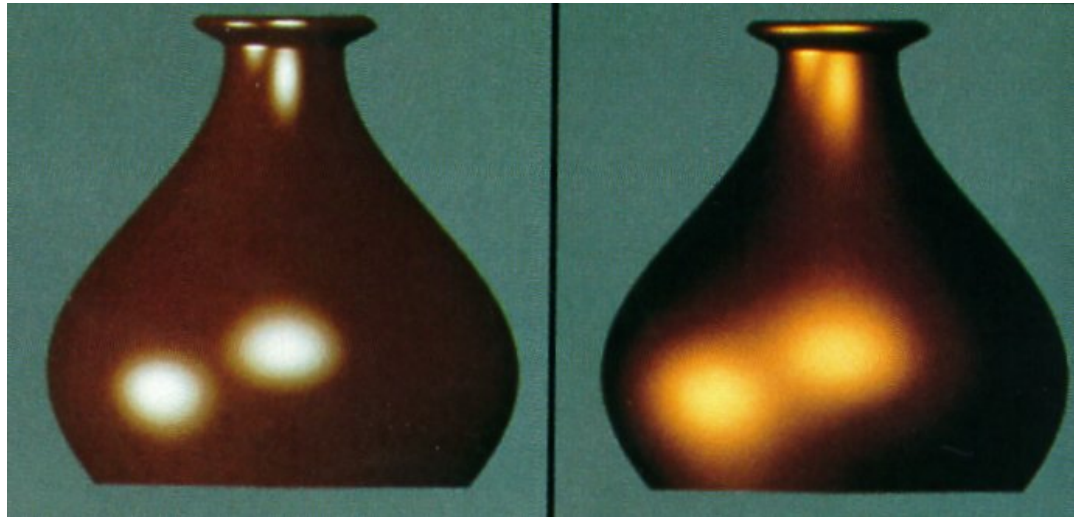
Hierarchical modeling



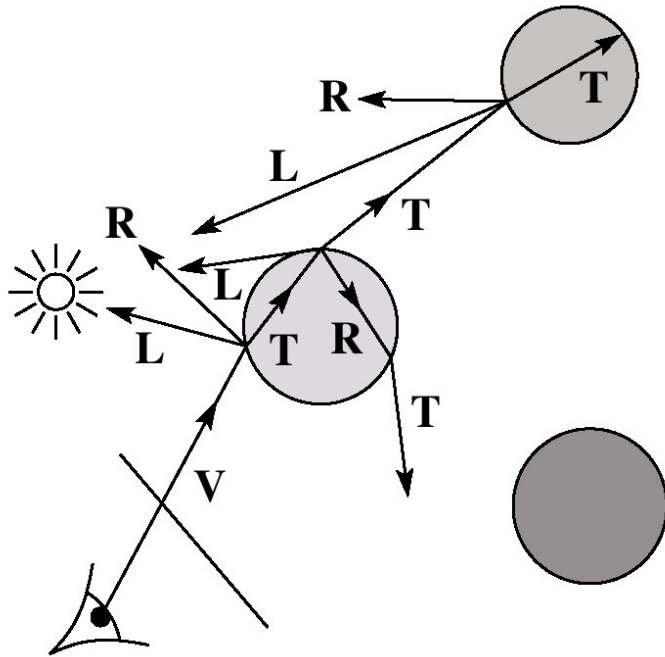
Shading

Plastic

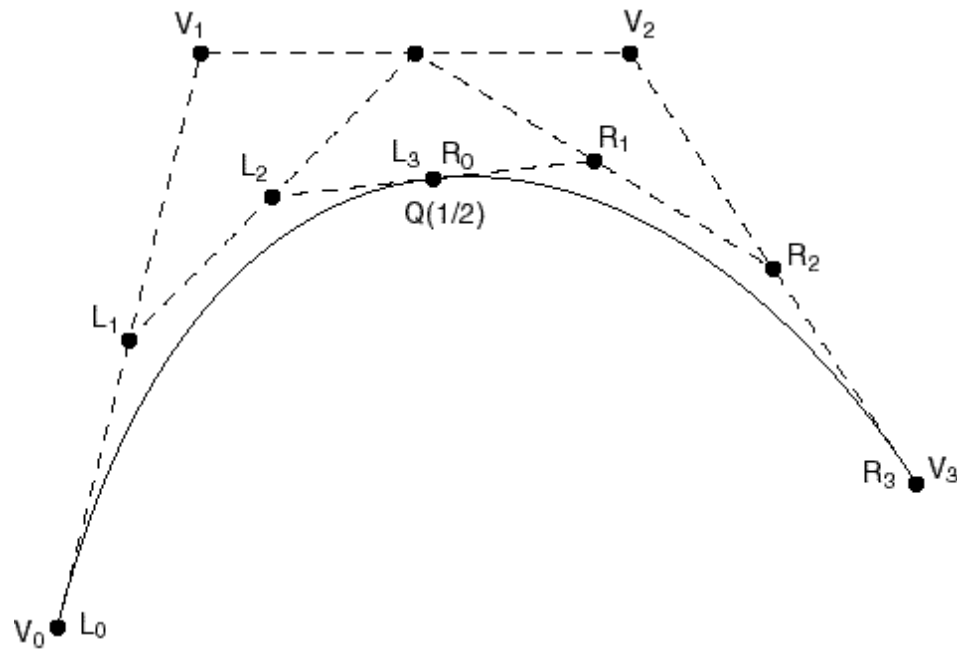
Metal



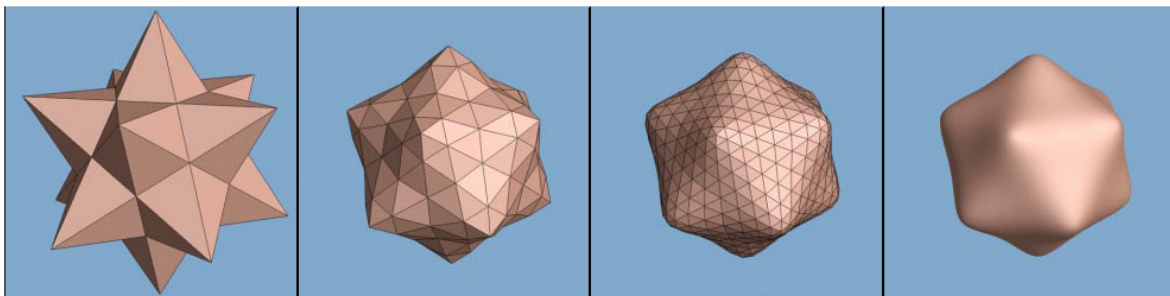
Ray tracing



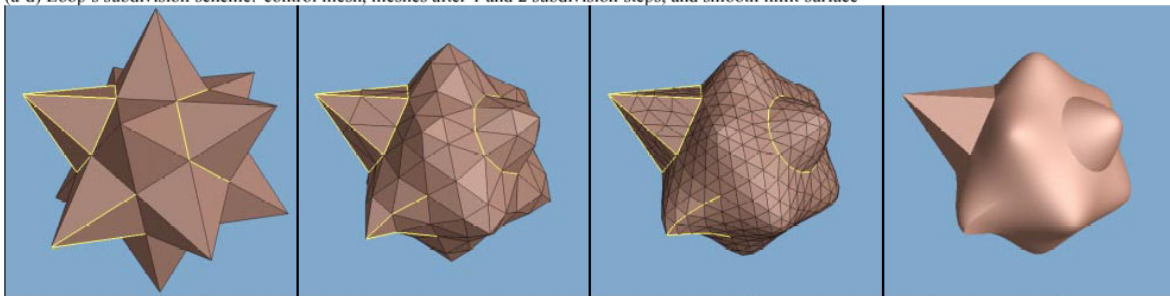
Curves



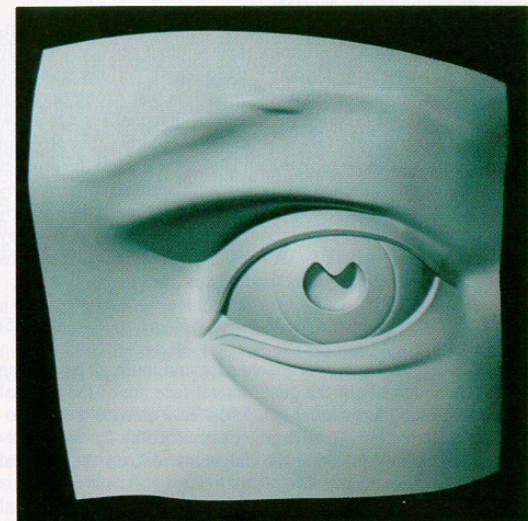
Surfaces



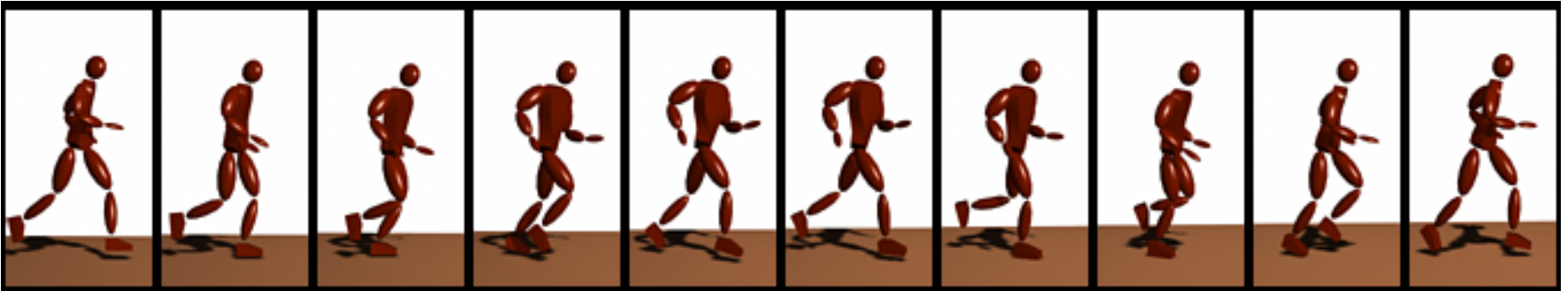
(a-d) Loop's subdivision scheme: control mesh, meshes after 1 and 2 subdivision steps, and smooth limit surface



(e-h) Our piecewise smooth subdivision scheme: tagged control mesh, meshes after 1 and 2 subdivision steps, and piecewise smooth limit surface



Animation



Keyframing and interpolation

Particle systems



Physical simulation with particle systems

Principles of Character Animation

