About Me

Scott Wehrwein
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Location

Wine

Scenic images of landscapes and a man holding a camera.
Computer Vision: Familiar Examples

In-Camera Face Detection

Autonomous Driving

Panorama Stitching

Image Search
About You

A quick survey will be out on Canvas after class. Due Thursday at 11am.
Logistics

The syllabus is [on] the course webpage:

https://facultyweb.cs.wwu.edu/~wehrwes/courses/csci480_20w/

This link can also be found on the Syllabus page on Canvas.
What is computer graphics?

A definition:

- The study of creating, manipulating, and using visual images in the computer.
What is computer graphics?

The latest and greatest - SIGGRAPH

- SIGGRAPH 2018
- SIGGRAPH 2019
- SIGGRAPH Asia 2019
What is computer graphics?

Areas:

• Imaging
  • 2D: photography, image processing, compositing
  • 3D: texture mapping, volume imaging
• Modeling
  • 2D: page description (e.g. PDF), typography, user interfaces
  • 3D: objects, characters, scenes
• Rendering
  • 2D: drawing shapes, motion blur, simulating art materials
  • 3D: realistic rendering; non-photorealistic rendering
• Animation
  • 2D: user interfaces, titles, 2D animated films, 2D games
  • 3D: technical illustration, animation, visual effects, games

[slides: Steve Marschner]
Font Rendering
Pollard's father was a prominent professor of microbiology who often took his family with him to scientific conferences. At least a dozen Nobel Prize winners attended young Pollard's fourth birthday party, which was celebrated in Sweden where his father was attending a conference. At Stanford University Pollard was known as a teller of tall tales, but was so well informed and articulate that he "made what might otherwise have been an outlandish series of claims quite convincing". Pollard's Stanford senior yearbook photo listed him as "Colonel" Pollard, and he reportedly convinced almost everyone that secret intelligence was paying his fees.

At one point, Pollard received permission to establish a back-channel contact with South African intelligence through a South African friend.

THE NUMBERS
READ:

83912

Sierra
India
Lima
Alpha
Sierra

10080

46543
46543
257 257 143 143

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2D Rendering
3D Modeling
3D Animation
3D Rendering
The Hobbit: An Unexpected Journey (New Line Cinema, 2012)—visual effects by Weta Digital
What is this course about?

• Modeling and rendering 3D scenes.
Two approaches to rendering

Image-order rendering

for each pixel:
  for each object:
    if this object is the closest one:
      determine what color the pixel should be
Two approaches to rendering

Image-order rendering

for each pixel:
  for each object:
    if this object is the closest one:
      determine what color the pixel should be

Object-order rendering

for each object:
  for each pixel:
    if the pixel sees the object
      determine what color the pixel should be
High-level course overview

• Assignment 1 - modeling
  Generate triangle meshes!

• Assignment 2 - image-order rendering
  Write your own ray tracer!

• Assignment 3 - object-order rendering
  Implement rasterization algorithms!
  Program the GPU using WebGL!

• Other topics as time allows:
  • Animation
  • Spline curves; parametric surfaces; surfaces of revolution
  • Global illumination