YOU KNOW THIS METAL RECTANGLE FULL OF LITTLE LIGHTS?

I SPEND MOST OF MY LIFE PRESSING BUTTONS TO MAKE THE PATTERN OF LIGHTS CHANGE HOWEVER I WANT. SOUNDS GOOD.

BUT TODAY, THE PATTERN OF LIGHTS IS ALL WRONG! OH GOD! TRY PRESSING MORE BUTTONS! IT'S NOT HELPING!

Fall 2022
About Me

Scott Wehrwein
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Scott Wehrwein
Computer Vision: Familiar Examples

- In-Camera Face Detection
- Autonomous Driving
- Panorama Stitching
- Image Search
About You

A quick survey is available on Canvas, due Friday at 10pm.
Meet and Greet

• Fill out a name card (both sides)

• Self-organize into groups of 3-4. Meet your group members and discuss:
  
  • What was your favorite thing you did this summer?
  
  • What are you looking forward to this fall (in this course or otherwise)?
  
  • What single word or phrase comes to mind when you think about computer graphics?

Agree on 2-3 words or phrases and be prepared to share. The person who woke up earliest today is the group’s spokesperson.
What is Computer Graphics?
What is computer graphics?

A definition:

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

The latest and greatest - SIGGRAPH

- SIGGRAPH 2022
- SIGGRAPH Asia 2021

- Much more on the SIGGRAPH youtube channel: https://www.youtube.com/channel/UCbaxUExGKrH2zxY4AkY9wCg
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
Imaging
2D Modeling
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.
2D Rendering
3D Modeling
3D Animation
3D Rendering
The syllabus is the course webpage:

https://facultyweb.cs.wwu.edu/~wehrwes/courses/csci480_22f/

This link can also be found on the Syllabus page on Canvas.
To do for Friday

• Fill out the About You survey on Canvas

• **Read the syllabus** (per Snoop Dogg’s plea)

• Bring any questions on syllabus, logistics, etc.
What is this course about?

Primarily: **modeling** and **rendering** 3D scenes.

Pseudocode for graphics:

- Create a model of a scene
- Render an image of the scene
YOU KNOW THIS METAL RECTANGLE FULL OF LITTLE LIGHTS?

YEAH.

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Create a Model of the Scene
Render an Image of the Scene

• What are images?

• How do we make them?
Two approaches to rendering

Image-order rendering

for each pixel:
    for each object:
        if object affects pixel:
            update pixel's color
Two approaches to rendering

Image-order rendering

for each pixel:
    for each object:
        if object affects pixel:
            update pixel's color

Object-order rendering

for each object:
    for each pixel:
        if object affects pixel:
            update pixel's color
High-level course overview

• Assignment 0 - a taste of 2D graphics
  Draw a triangle on a screen!

• 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
  • Image-based rendering; novel view synthesis
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