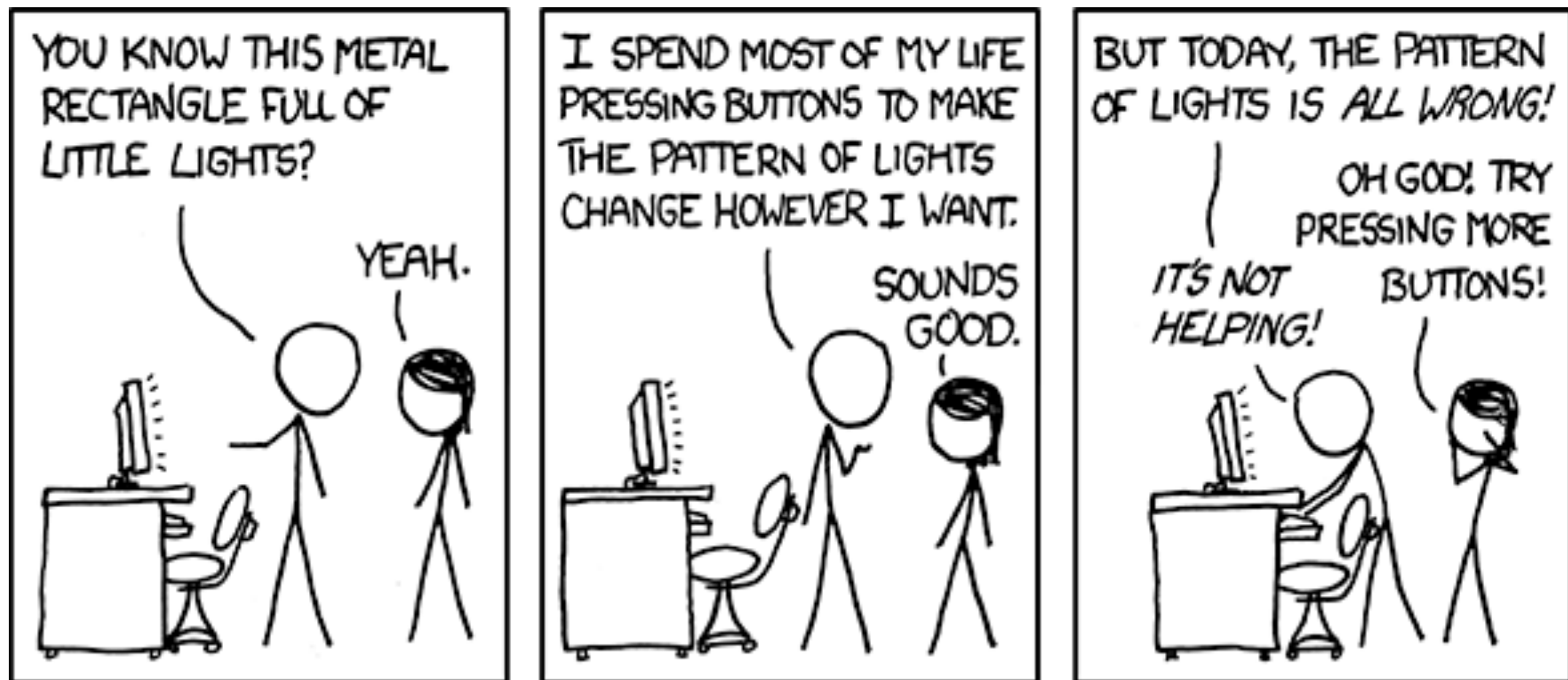


CSCI 480 / 580

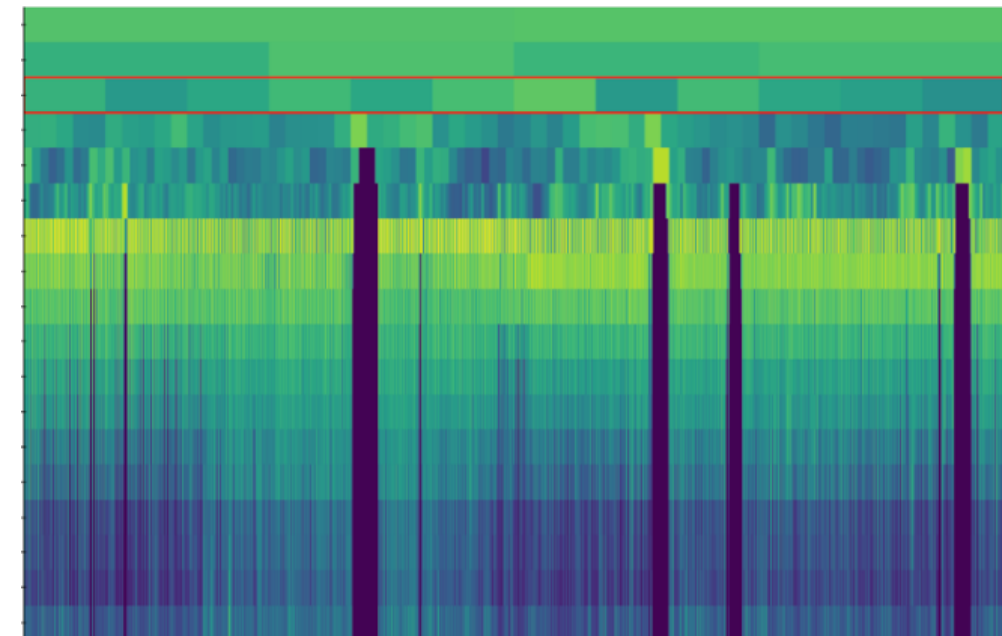
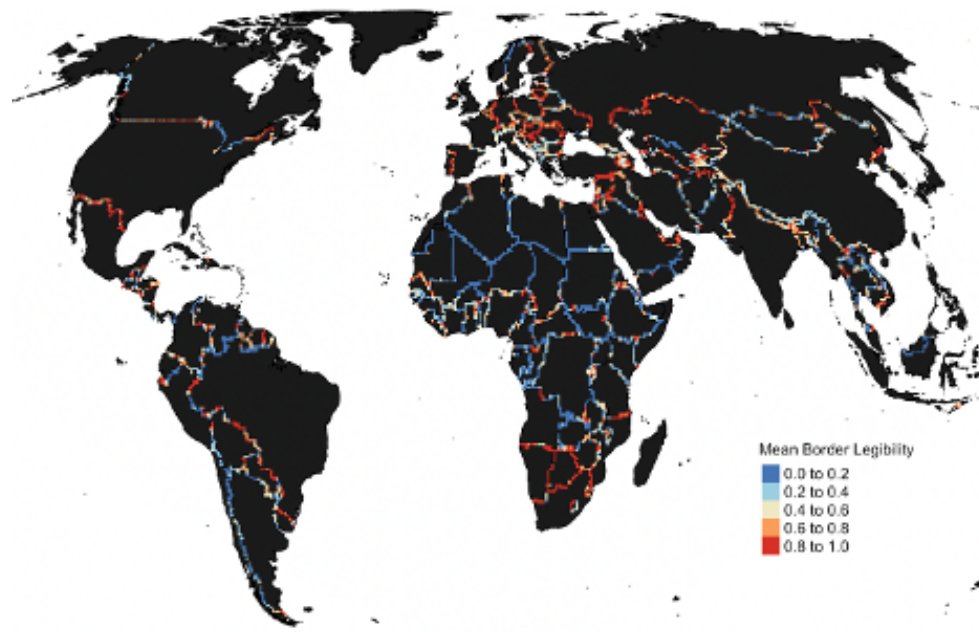
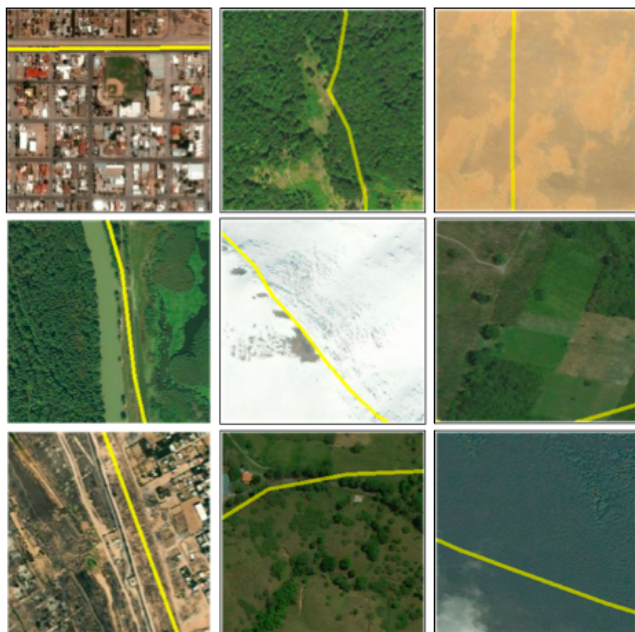
Computer Graphics



Fall 2024

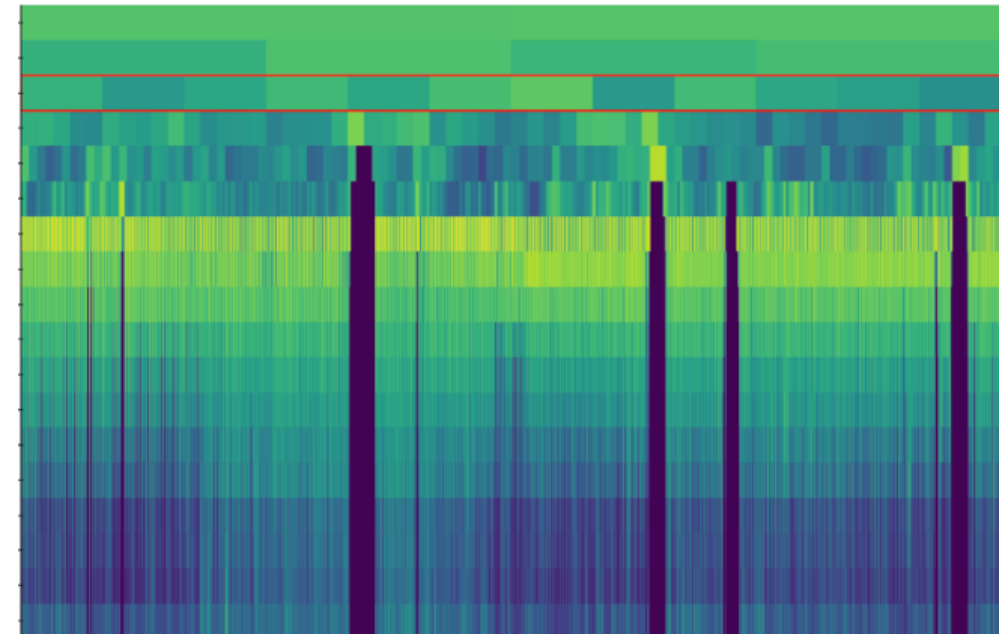
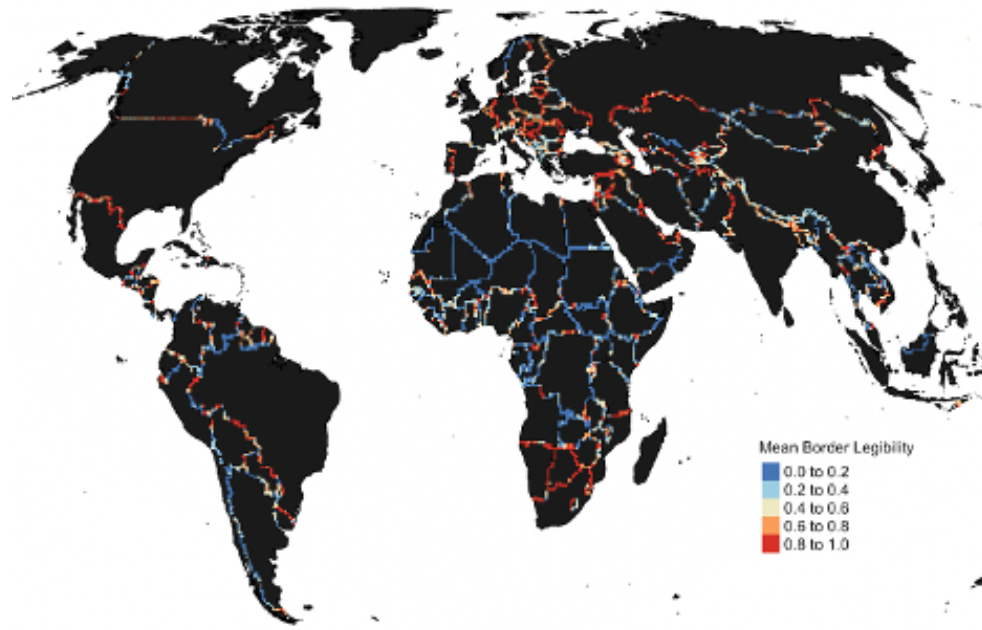
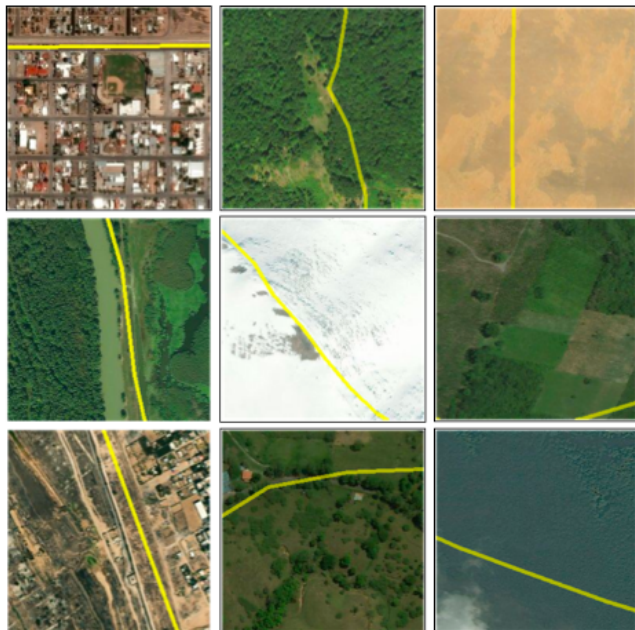
About Me:

Scott



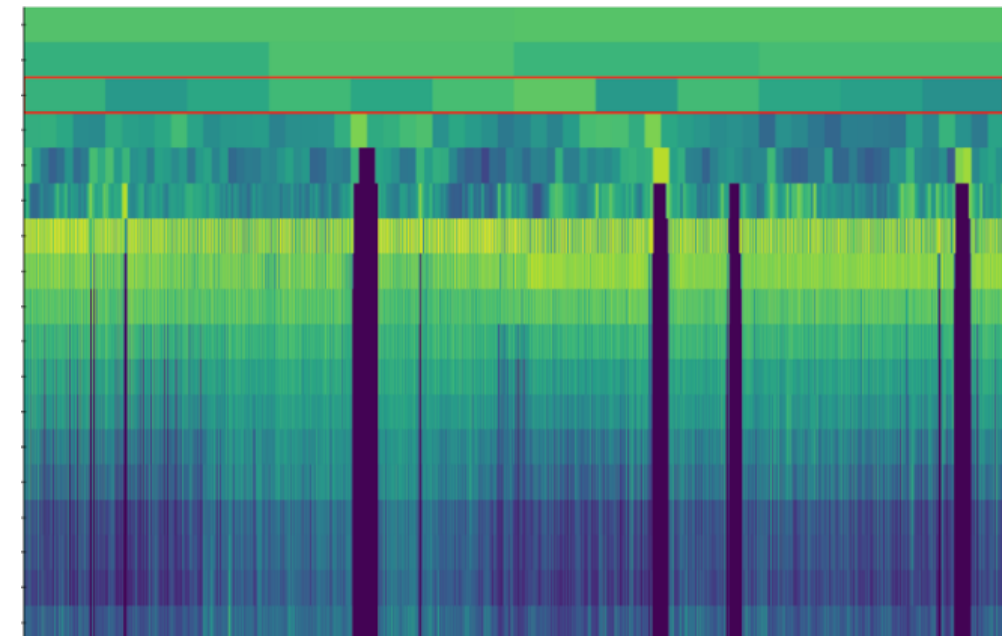
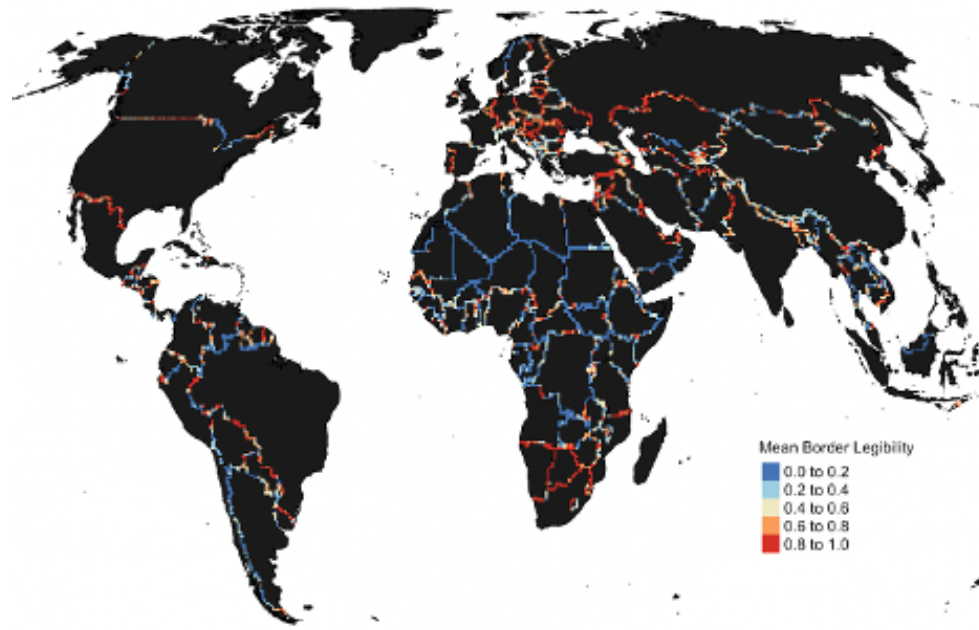
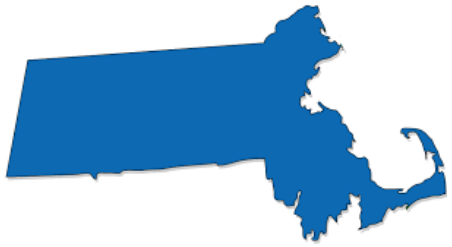
About Me:

Scott Wehr



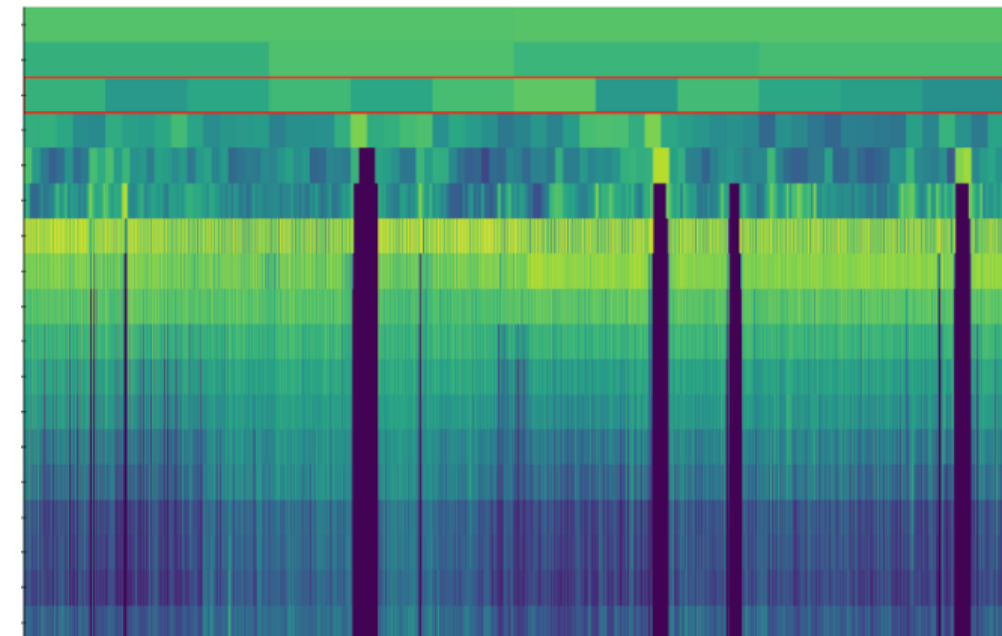
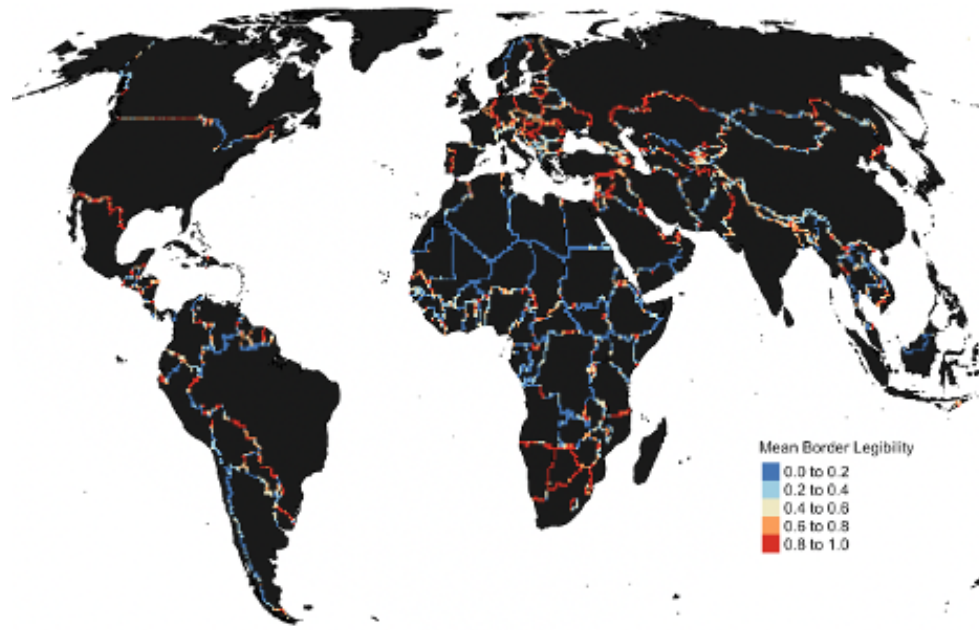
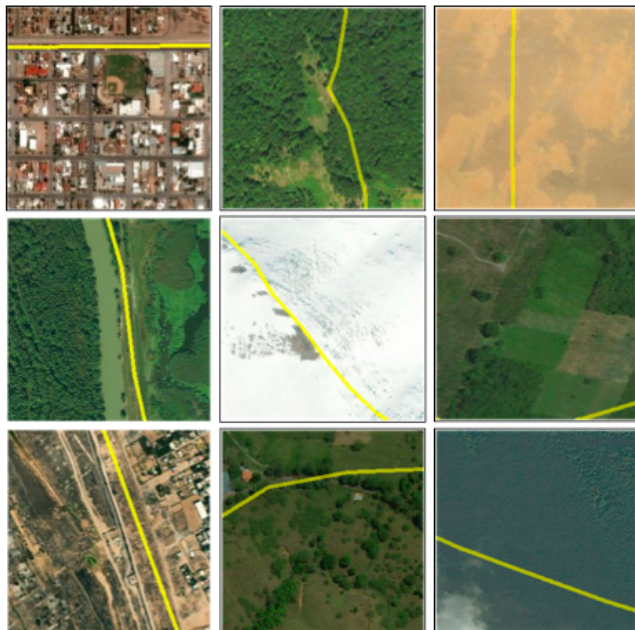
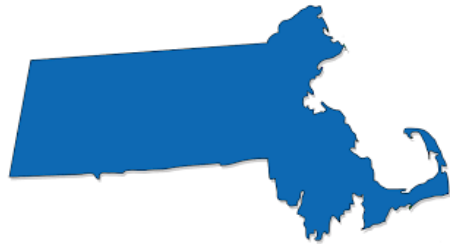
About Me:

Scott Wehrwein



About Me:

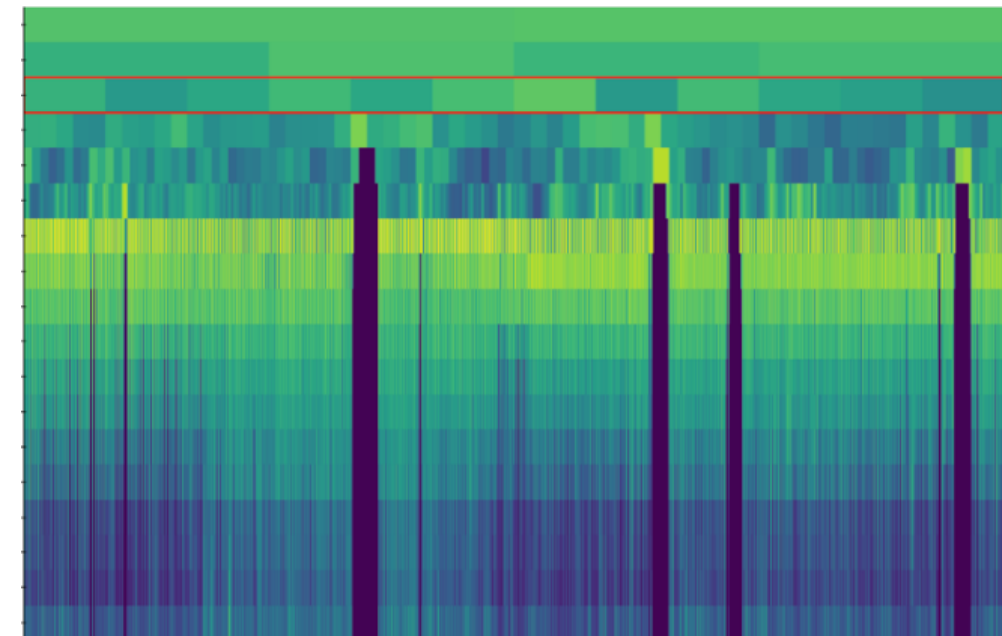
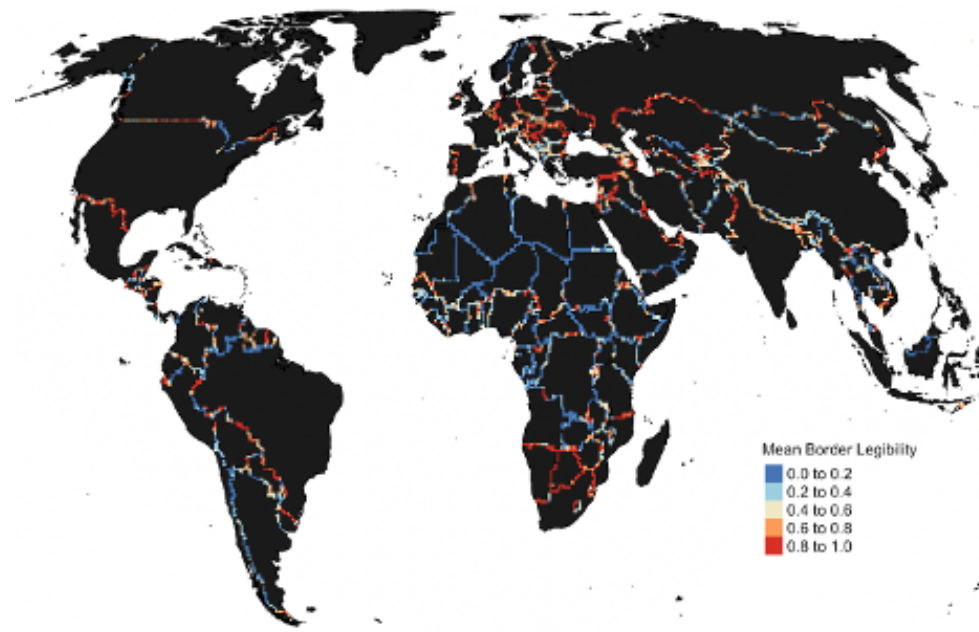
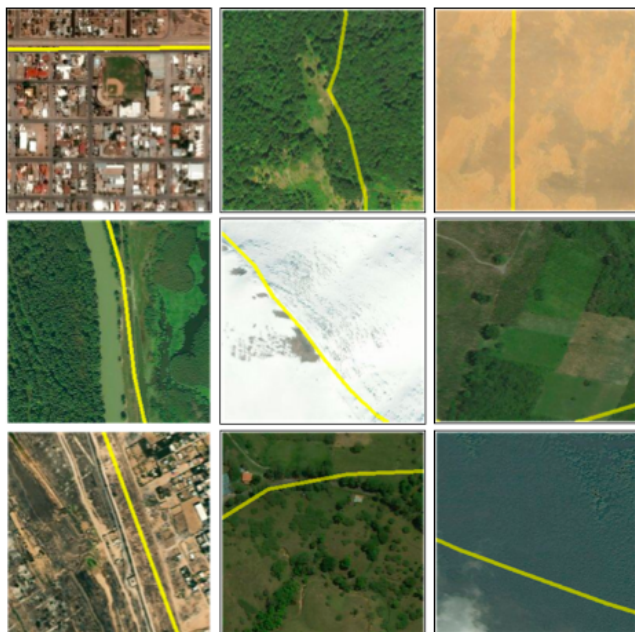
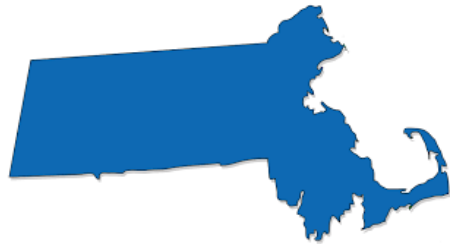
Scott Wehrwein



About Me:

Scott Wehrwein

(call me this!)



About You

A quick survey is available on Canvas, due **tonight** at 10pm.

About you, pt 2

- Fill out a name card (both sides; add pronouns if you like)
- 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?**

Be prepared to share one of your group's words or phrases.
The person who woke up earliest today is the group's pokesperson.

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 2024](#)
- [SIGGRAPH Asia 2023](#)
- Much more on the SIGGRAPH youtube channel:
<https://www.youtube.com/@ACMSIGGRAPH>

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

Thin 9 pt

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.

Light 9 pt

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

All weights 75 pt

Sierra
India
Lima
Alpha
Sierra

Regular 9 pt

Bold 9 pt

FS Slab Slab

Page 04

FS Slab Sans

Bold 48 pt

THE NUMBERS
READ:

ExtraBold 134 pt

83912

Bold 28 pt

83912

Light 8 pt

Der russische Mann,
Familie 1 Unterfamilie A
KGB/FSB/GRU
(Die 00000-Familie)

Bold 28 pt

10080

Bold 36 pt

10080 46543 46543
— 257 257 143 143 —

Regular 6 pt

Enigma-ID: 506
Frequenzen: Diverse
Status: Aktiv
Stimme: männlich, autom



Regular 6 pt

Übertragungsart: USB + Kurier
Ort: Russland
Bekannte Referenzstationen:
E06, E17, G06, V06, V23, M14, M24

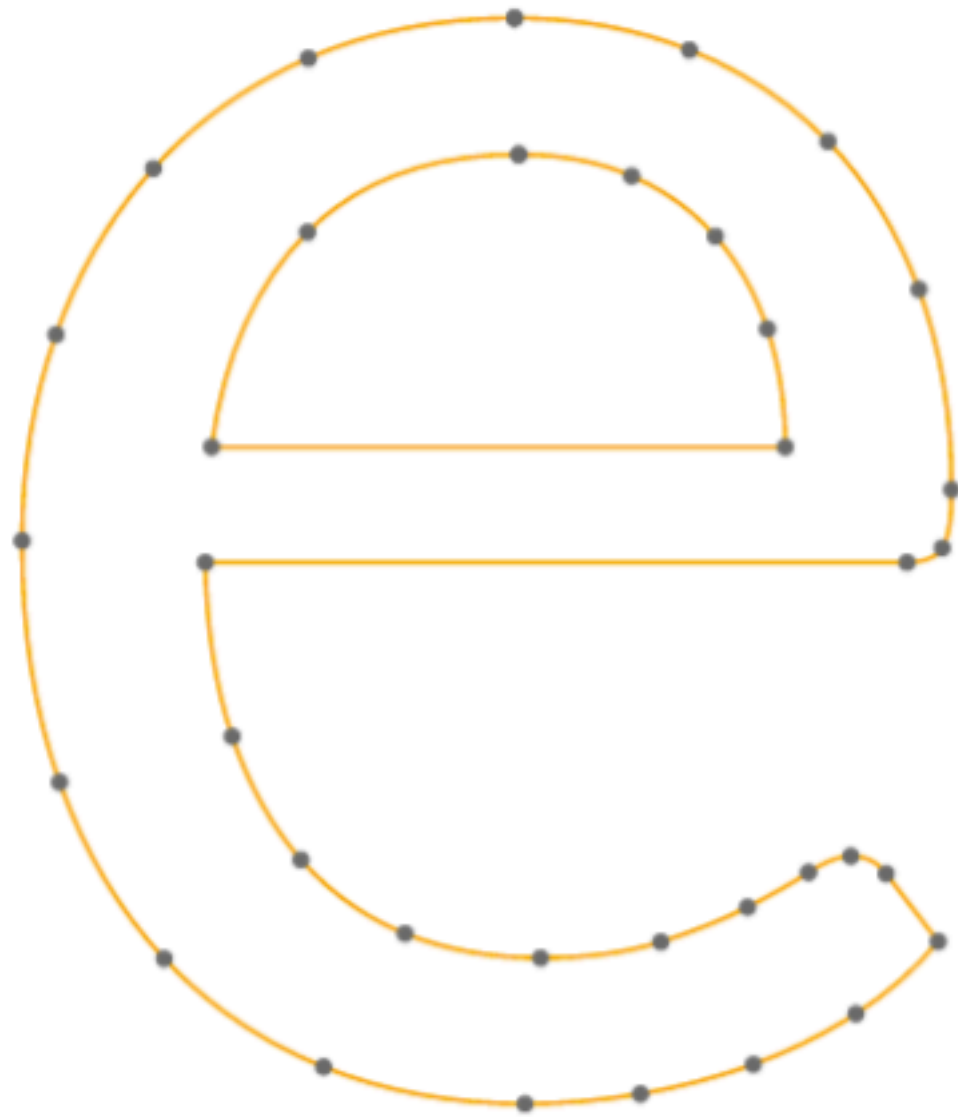
Extra Bold 110 pt

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FS Slab Slab

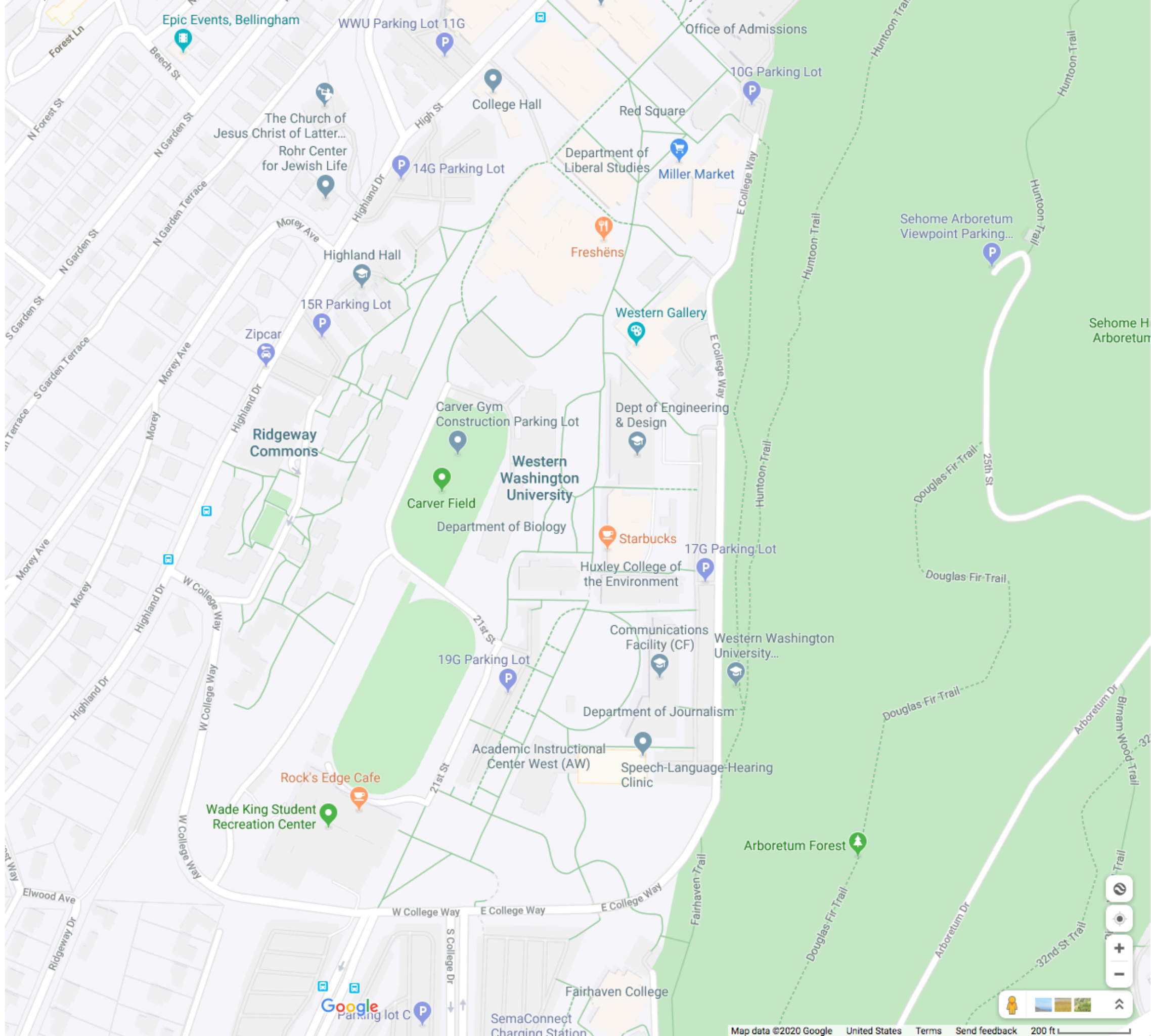
Page 05

FS Slab Sans



Pavithra Solai, kint.io

2D Rendering



Epic Events, Bellingham

WWU Parking Lot 11G

Office of Admissions

10G Parking Lot

College Hall

The Church of Jesus Christ of Latter...
Rohr Center for Jewish Life

14G Parking Lot

Department of Liberal Studies

Miller Market

Highland Hall

Freshëns

Sehome Arboretum Viewpoint Parking...

15R Parking Lot

Western Gallery

Zipcar

Carver Gym Construction Parking Lot

Dept of Engineering & Design

Ridgeway Commons

Western Washington University

Carver Field

Department of Biology

Starbucks

Huxley College of the Environment

17G Parking Lot

19G Parking Lot

Communications Facility (CF)

Western Washington University...

Department of Journalism

Academic Instructional Center West (AW)

Speech-Language-Hearing Clinic

Rock's Edge Cafe

Wade King Student Recreation Center

Arboretum Forest

W College Way

E College Way

E College Way

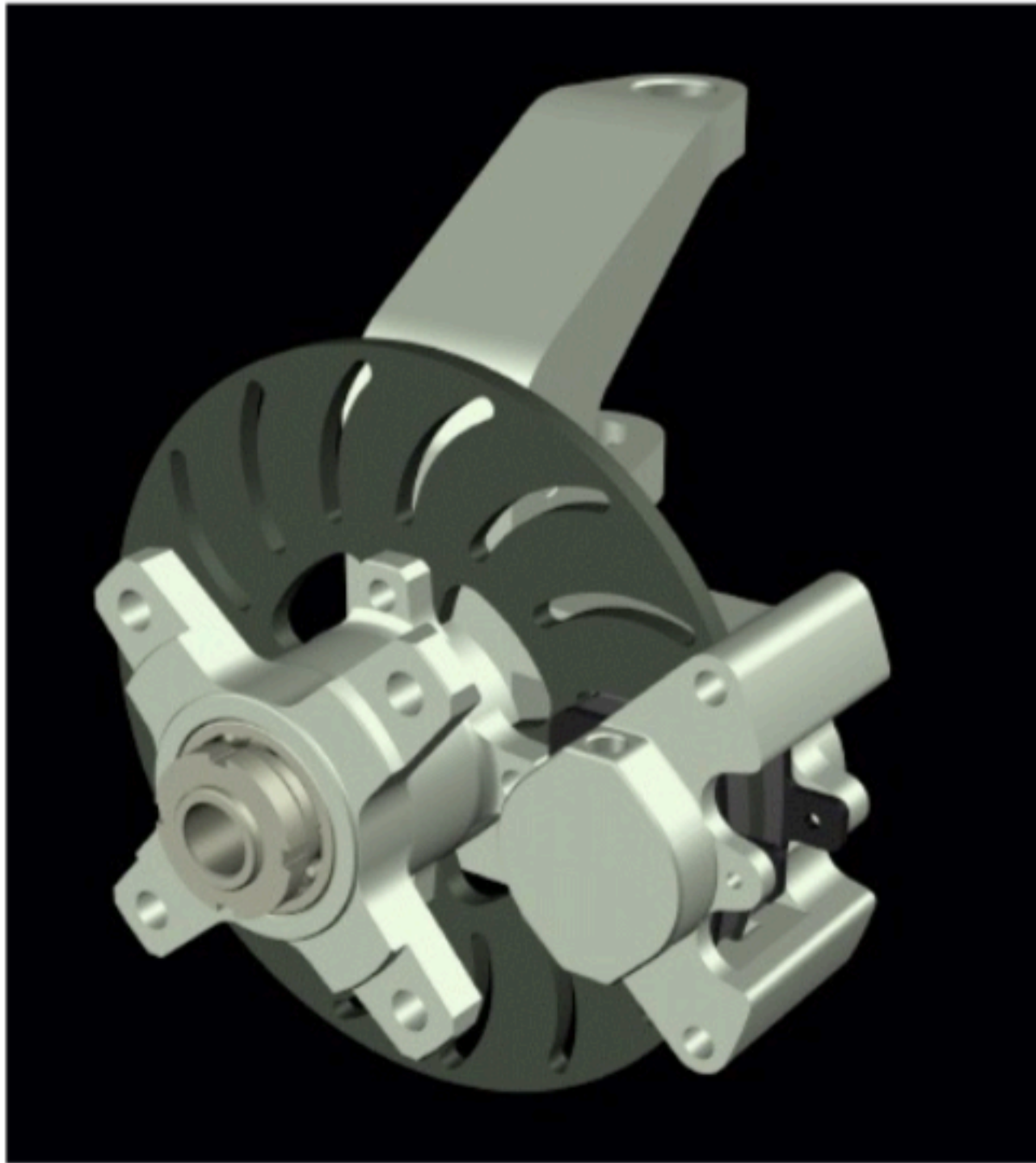
Fairhaven College

Google

Parking lot C

SemaConnect Charging Station

3D Modeling



U. of Utah—Alpha I



3D Animation



Pixar—Toy Story



3D Rendering



The Hobbit: An Unexpected Journey (New Line Cinema, 2012)—visual effects by Weta Digital

The syllabus **is** the course webpage:

https://facultyweb.cs.wvu.edu/~wehrwes/courses/csci480_24f

This link can also be found on the Syllabus page on Canvas.

CSCI 480/580 - Computer Graphics

Scott Wehrwein

Fall 2024

- [Course Overview](#)
- [Assessment](#)
- [Logistics](#)
- [Schedule](#)
- [Course Policies](#)
- [Resources for Getting Help and Support](#)

Quick Links:

- [Course webpage](#) (you are here)
- [Canvas](#)
- [Feedback](#)

Course Overview

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

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

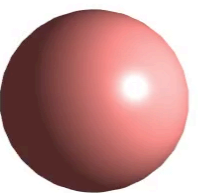
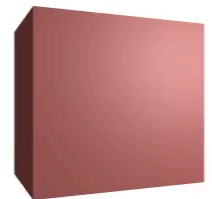
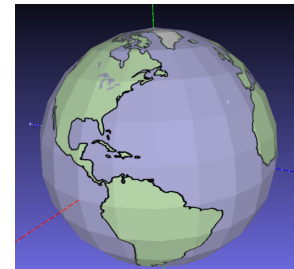
Image-order rendering

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

Object-order rendering

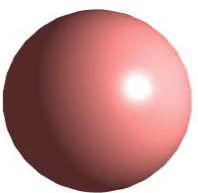
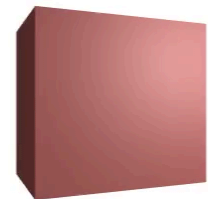
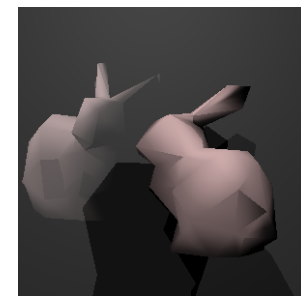
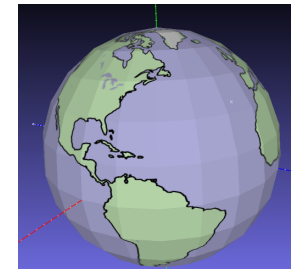
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```

High-level course overview



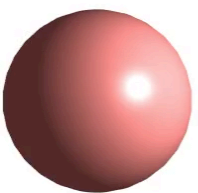
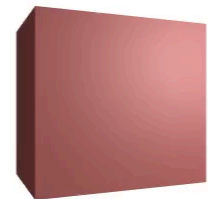
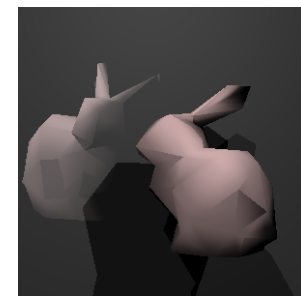
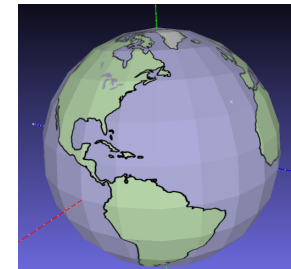
High-level course overview

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



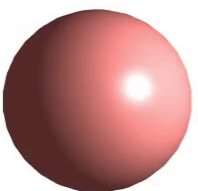
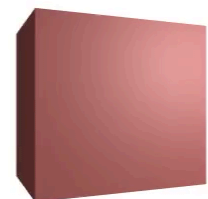
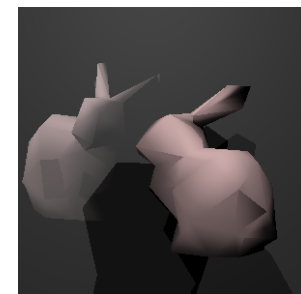
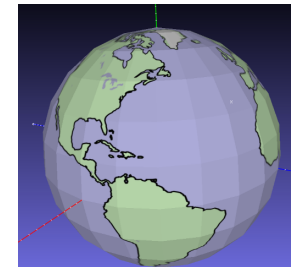
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- Assignment 1 - modeling
Generate triangle meshes!



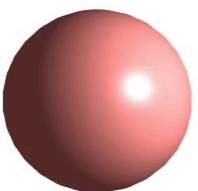
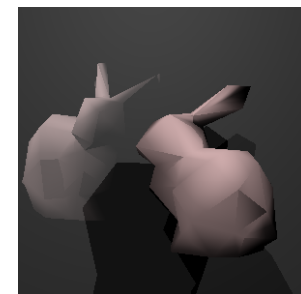
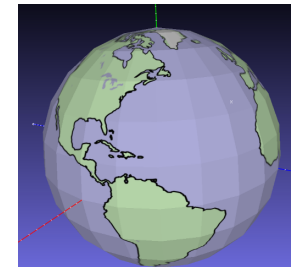
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Write your own ray tracer!



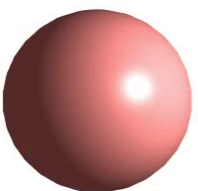
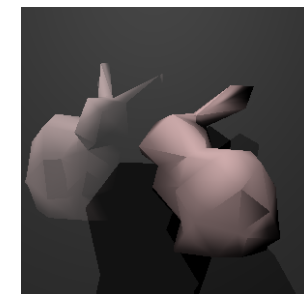
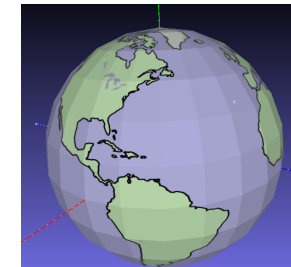
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Implement rasterization algorithms!
Program the GPU using WebGL!



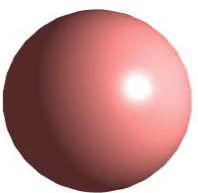
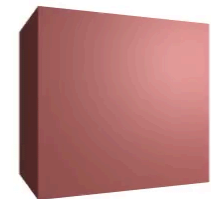
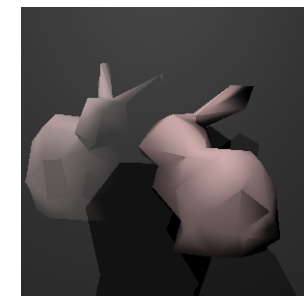
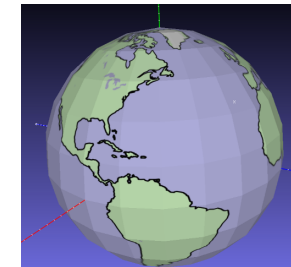
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 - Spline curves; parametric surfaces; surfaces of revolution
 - Global illumination
 - Image-based rendering; novel view synthesis



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- **Read the syllabus**
- Bring any questions on syllabus, logistics, etc.

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