Computer Vision

CSE 455

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Course Information

• Time:
  – TTH: 10:00 to 11:20

• Location:
  – Zoom lectures: https://washington.zoom.us/s/553420896

• Contact:
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• TAs:
  – Bindita Chaudhuri
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• Website:
  – https://courses.cs.washington.edu/courses/cse455/20sp/
Topics

• Introduction
• Color and Texture
• Image Coordinates, Transforms, and Resizing
• Filters and Convolutions
• Edges and Lines
• Interest Operators, Image Matching, Image Stitching
• Motion, Optical Flow
• 3D Depth Perception
• Stereo
• Machine Learning Overview including Neural Nets
• Object Detection and Recognition with ML
• Convolutional Neural Networks
• CNN Applications
Grading (tentative)

• Seven regular assignments (80%)
• One Course Project (20%)
• NO EXAMS (Yay!)
Assignments

• Build a vision library from the ground up
• Mostly in C
• Play with advanced tools, neural networks

• Beginning: lots of skeleton code, explanations
• End: less guidance, more experimentation
Assignment 0: Fun with Color
Assignment 1: Image Resizing
Assignment 2: Image Filtering
Assignment 3: Panorama Stitching
Assignment 4: Optical Flow
Assignment 5: Neural Networks

Here are the classes in the dataset, as well as 10 random images from each:

- airplane
- automobile
- bird
- cat
- deer
- dog
- frog
- horse
- ship
- truck
Assignment 6: PyTorch
Final Course Project: Machine Learning for Some Kind of Application
Books

Older, but designed for undergrads and has the basics. Chapters available from our web page.

Newest and available as a pdf online.
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