Assignment 4 Writeup

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October 25, 2023

1 Short answer problems

1. What is the relation between image classification and object detection? Please give two concrete exampleson how they are related (e.g., one is applied to solve another)?

2. Please compare semantic segmentation, instance segmentation and object detection. Describe the similarities and differences.

3. Describe at least two plausible neural network designs for the task of semantic segmentations.

4. What are the applications of generative models in solving core computer vision tasks.

5. Discuss the differences between convolution neural networks and deconvolution neural networks.

2 Image Classification

- Compare the performance between K-Nearest Neighbor classifier and Adaptive Boosting classifier;

- Analyze the performance of these two methods when varying the size of the training set and the size of the testing set;

- Perform cross-validation to study the hyper-parameters of each method;

- Try different feature representations.