Active Learning for Computer Vision Curriculum

Project 10: Active Transfer Learning

Total Points Possible: 50

Problem 1 (10 points)

How does transfer learning address the problem of learning with weak supervision? Explain with an example.

Problem 2 (40 points)

Download the "Office" dataset:
https://people.eecs.berkeley.edu/~jhoffman/domainadapt/#datasets_code

This dataset contains images of objects from 31 categories and 3 different domains: Amazon, Webcam and DSLR.

Implement the Joint Transfer and Batch Mode Active Learning algorithm proposed by Chattopadhyay et al (discussed in the slides). Test the performance of the algorithm on every pair of source-target domains in the "Office" dataset. Split the target domain data as 10% labeled, 40% unlabeled and 50% for testing at random.

Compare the performance of this algorithm against the *2S-T-Rand* algorithm, where domain adaptation is first performed on the source data using the instance weighting method and then unlabeled target samples are randomly selected for active learning. Please refer the paper for more details.

Report the percentage accuracy obtained on the test set.