Active Learning for Computer Vision Curriculum

Project 9: Active Learning Variants

Total Points Possible: 50

Datasets: The datasets required for this project are included in the folder. For the feature matrix in each dataset, each row denotes a sample and each column denotes a feature.

Problem 1 (25 points)

Consider the VidTIMIT dataset for facial image recognition. Implement the VOI-based binary query algorithm (proposed by Joshi et al.) on this dataset. Compare the performance of this algorithm against Uncertainty Sampling. Please refer the paper by Joshi et al. for reference.

Problem 2 (25 points)

Think of an application where providing labels on unlabeled samples in a different way is more beneficial than providing the absolute class labels. Write the high-level idea (in the form of pseudo-code) of an active learning algorithm to query unlabaled samples in such an application. You should clearly describe the query criterion and how the learning algorithm incorporates the feedback received from the labeling agents.