Classification of Images into specific Scene Categories

Motivation

- Websites like Yelp/TripAdvisor/FourSquare are overflowing with images of places.
- Images are mostly uploaded by users rather than owners of places.
- Lack of proper sub-categorization makes it difficult for users to select places by navigating through huge data sets of images

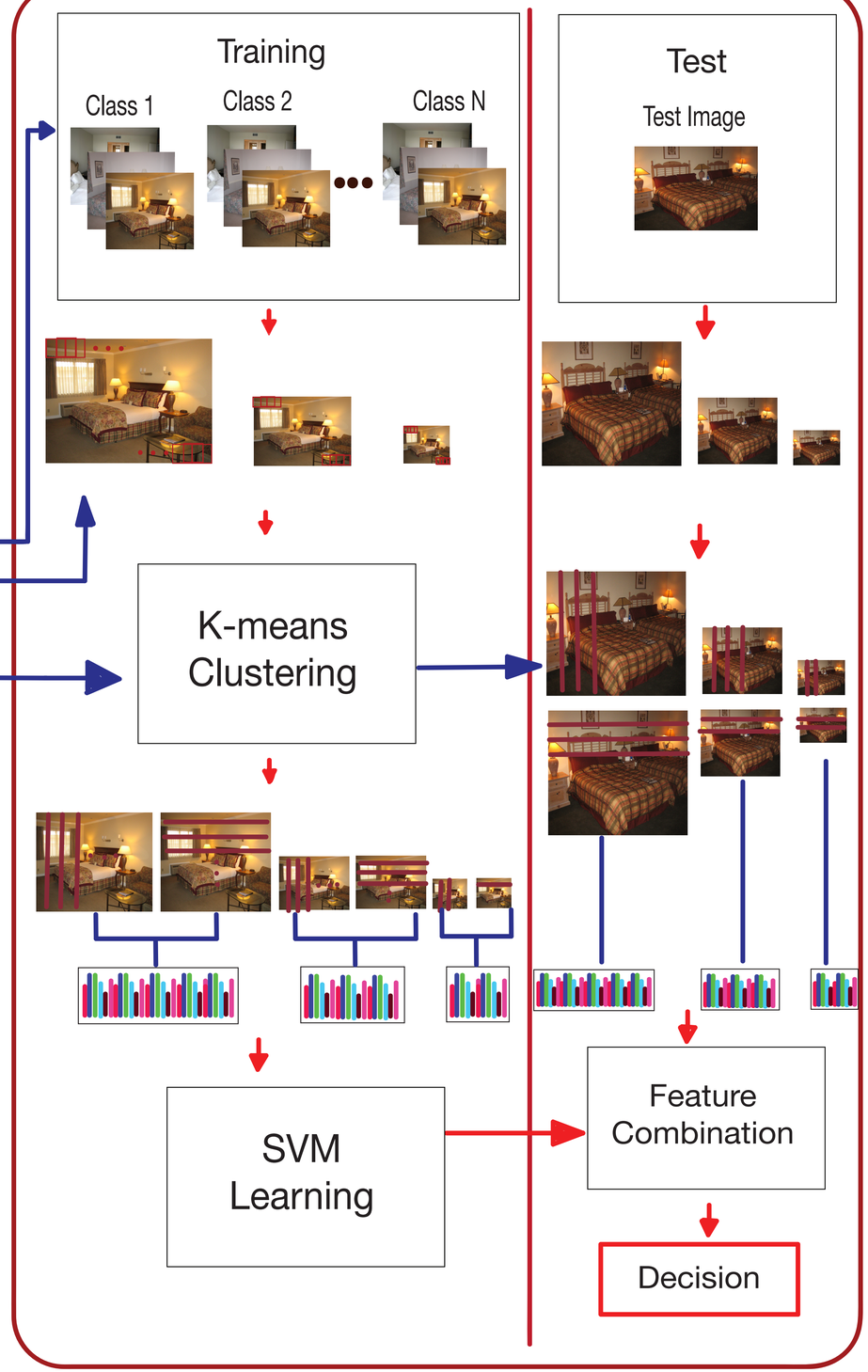
Steps

- Load training Images
- Create multi resolution images and locate SIFT features in these partitions
- Cluster the features and generate codebook
- Compute histogram of codeword so that the spatial information is intact
- Train SVM on the generated codebook
- Take a test image, generate SIFT features, pass it to SVM classifier to classify it into a class

Dataset

We selected the classes of images that we used from the following datasets:

- 8-category scene from Oliva and Torralba
- 13-category scenes from Fei-Fei and Perona
- 15-category scenes from Lazebnik
- 8-category sports events from Li-Jia and Fei-Fei
- 67-category indoor scenes from Quattoni and Torralba



Performance Evaluation

Accuracy Measure = Sensitivity / Recall

Sensitivity = True Positive / (True Positive + False Negative)

Results

	Casino	Bedroom	Church	Classoom	Cloister	Closet
Casino	5	0	19	1	0	0
Bedroom	0	6	16	0	3	0
Church	0	3	19	3	0	0
Classoom	2	8	1	14	0	0
Cloister	3	3	0	0	19	0
Closet	4	2	4	11	0	4

Summary and Future Work

- The results we got from our current implementation can be found from the confusion matrix displayed above.
- In our later work, we plan to include more classes.
- We plan on getting better classification accuracy when the image has noise and unexpected items in them scene.
- We are also planning to integrate with a live application such as Yelp so that it will be of help to user in real time.