CSE 6367 Assignment #6

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Problem 1

a

In this Problem, I have write a MATLAB function **"get_tiny_image.m"** that simply re-sizes an input image to a small, fixed resolution of 16×16. The function is attached with the report.

b

In this Problem, I have write a MATLAB function **"predict_knn.m"** that uses a KNN classifier to predict the label of the testing data. I have tested with different value of k, and got the best result using its value as 4. The function is attached with the report.

c

In this Problem, I have write a MATLAB function **"classify_knn_tiny.m"** that predict the accuracy of the KNN model using the previous function. The function is attached with the report. The accuracy for predicting test images is more that 20% which is more than our requirement. The confusion matrix and classification accuracy is attached below:

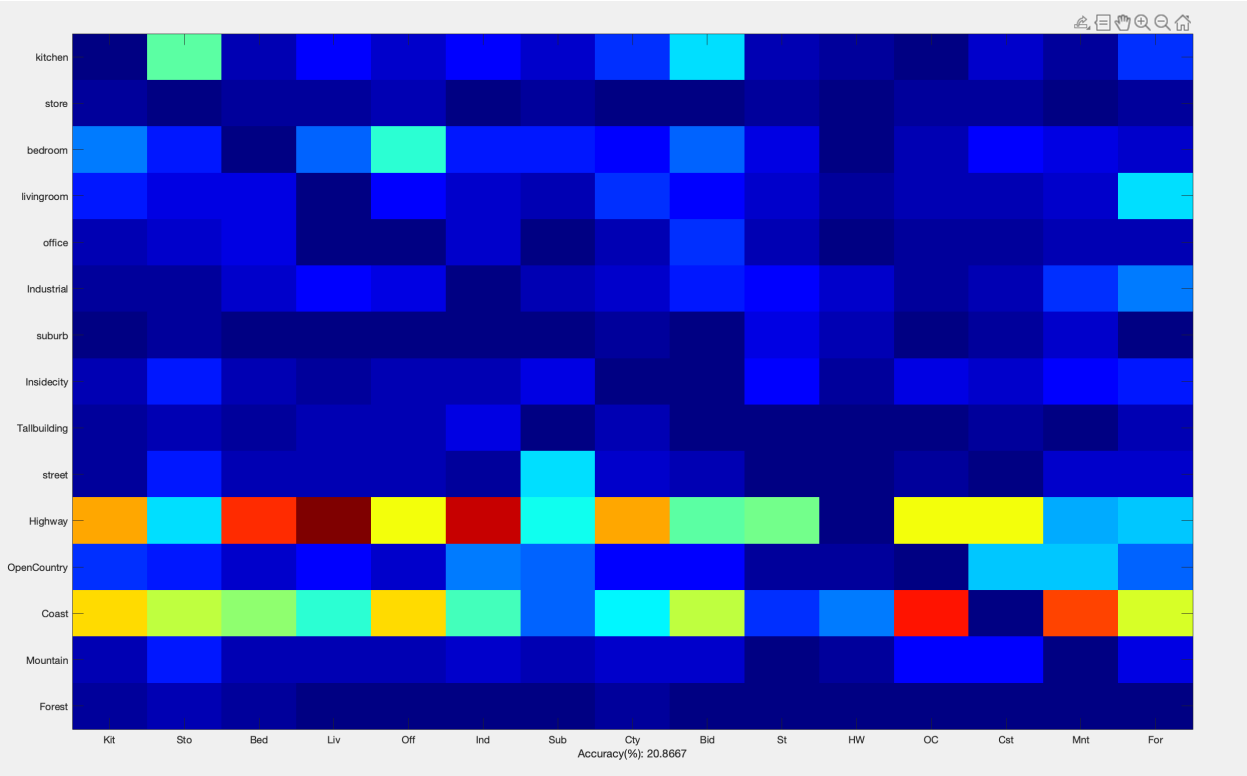

Figure 1: confusion matrix and classification accuracy for KNN classifier

Problem 2

a

In this Problem, I have write a MATLAB function **"build_visual_dictionary.m"** that builds a visual dictionary of quantized SIFT features. I have used dict size as 50. For using the SIFT features, I have installed **"vlfeat-0.9.21"** in my local directory. The function is attached with the report.

b

In this Problem, I have write a MATLAB function **"compute_bow.m"** that computes the BoW feature vector. The function is attached with the report.

c

In this Problem, I have write a MATLAB function **"classify_knn_tiny.m"** that that combines **"build_visual_dictionary.m"**, **"compute_bow.m"** and **"predict_knn.m"** for scene classification given BoW features. The function is attached with the report. The accuracy for predicting test images is more that 53% which is more than our requirement. The confusion matrix and classification accuracy is attached below:

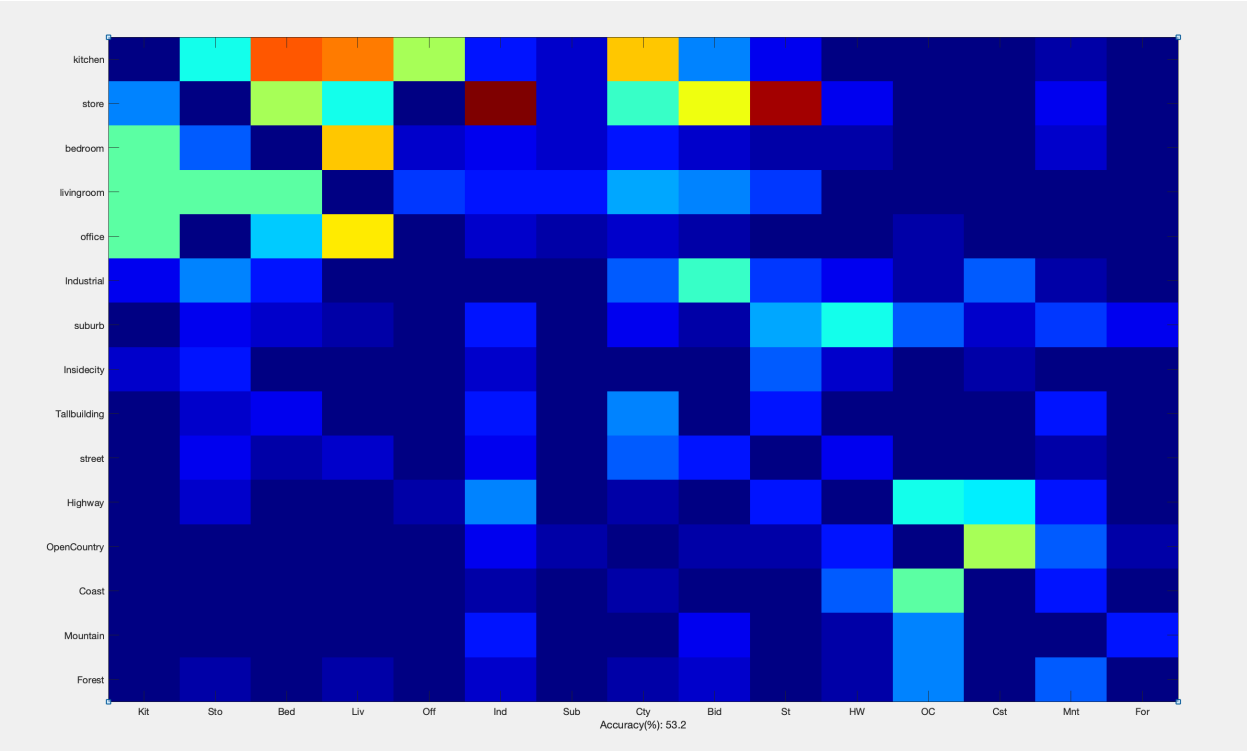

Figure 2: Confusion matrix for BoW and KNN classification Using SIFT feature