

## CSCI 5561 (Computer Vision)

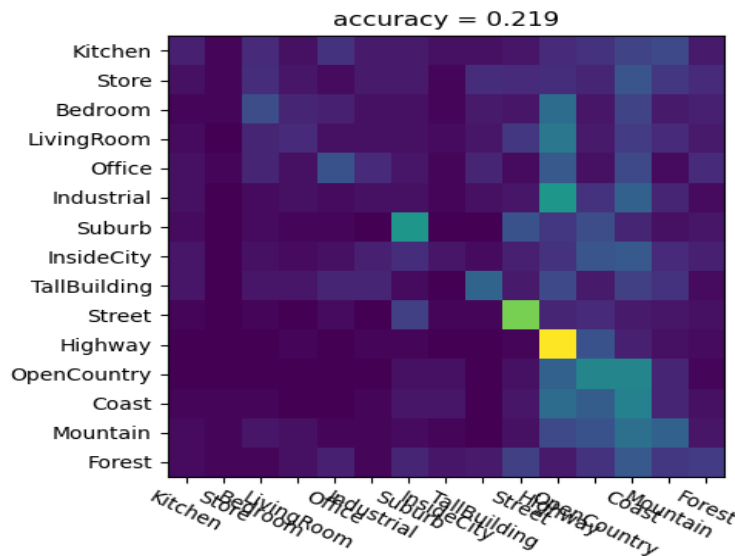
### Homework 3 Summary

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1. Tiny Image KNN classification - Initially, we resize each image in the training and testing datasets to a small, fixed resolution 16x16 by averaging the pixel values in blocks and then subtracting these with mean to discard any high-frequency data. Now we use the k nearest neighbor classifier with  $k=8$  clusters trained using resized training data to predict the resized test image labels. We use these predicted labels and original labels to get the accuracy of the KNN classifier and also calculate the confusion matrix.



2. BoW KNN classification - Initially we compute dsift of the training images with a stride of 8 and the size of the keypoints 8, this returns sift features of size  $n \times 128$  for each image. Now for these dense features we perform kmeans clustering to get 50 cluster centres thus building a visual dictionary where cluster centres are visual words. Now we use this visual dictionary on both training and testing images and compute the bag of words feature vector for them by calculating sift features that fall into each cluster of vocabulary. Now we use the k nearest neighbor classifier with  $k=8$  clusters trained using feature vectors of training data to predict the test image labels. We use these predicted labels and original labels to get the accuracy of the KNN classifier and also calculate the confusion matrix.

