CS 4476
PS 5

Name
GT Email
GT ID

Part 1: Tiny Image Representation and Nearest-Neighbor Classification

Part 1.3.a: Your confusion matrix, together with the accuracy for Part 1 with the standard parameter set (image_size = 16, k = 3)

<Plot here>

Part 1.3.b: Experiments: change image size and k individually using the following values, and report the accuracy (when tuning one parameter, keep the other as the standard (16 x 16, 3)):

ie. when you're tuning image size, keep k at 3, when changing k, keep image size as 16x16

image size:

8 x 8:

16 x 16:

32 x 32:

k:

1:

3:

5:

10:

15:

Part 1.3.c: When tuning the parameters (image size and k), what did you observe about the *processing time and accuracy*? What do you think led to this observation?

<Text solution here>

Part 2: Bag-of-words with SIFT Features

Part 2.3: Reflection on Tiny Image Representation vs. Bag of Words with SIFT features:

Why do you think that the tiny image representation gives a much worse accuracy than bag of words? Additionally why do you think Bag of Words is better in this case?

<Text solution here>

Part 2.4.a: Your confusion matrix, together with the accuracy for Part 2 with the standard parameter set (vocab_size = 50, k = 3, max_iter = 10, stride(build_vocab) = 20, stride(get_bags_of_sift) = 5

Part 2.4.a: Experiments: change vocab_size and k individually using the following values, and report the accuracy (when tuning one parameter, keep the other as the standard (50, 3)):

ie. when you're tuning vocab_size, keep k at 3, when changing k, keep vocab_size as 50. (Other params max_iter = 10, stride(build_vocab) = 20, stride(get_bags_of_sift) = 5)

vocab size:

50:

100:

200:

k:

1:

3:

5:

10:

15:

Part 2.4.a: Paste the confusion matrix for your best result with the previous experimentation in this slide.

<Plot here>

vocab_size:

k:

max_iter: 10

stride(build_vocab): 20

stride(get_bags_of_sift): 5

Part 2.4.b: Reflection: when experimenting with the value k in kNN, what did you observe? Compare the performance difference with the k value experiment in Part 1.3, what can you tell from this?

<Text solution here>

Part 3: Extra Credit

EXTRA CREDIT

Part 3.1: Post best confusion matrix, together with the accuracy out of all the parameters you tested. Report the parameter settings used to obtain this result.

<Plot here>

Parameter settings:

max_iter:

stride(build_vocab):

stride(get_bags_of_sift):

vocab_size:

k (kNN):

EXTRA CREDIT

Part 3.2: Post confusion matrix along with the distance metric that you used for achieving a better accuracy on standard parameters. Why do you think it performs better?

<Plot here>

Distance metric and why it works better:

EXTRA CREDIT

Part 3.3: Post confusion matrix along with your explanation of your SVM model and detail any other changes your made to reach an accuracy of 65% or greater.

<Plot here>

Description of your model: