SCS Fall - 2020

Home

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Assignments

Grades

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Assignment 2 - Convolutional Neural Nets and Transfer Learning

Re-submit Assignment

Due Oct 27 by 6pm   **Points** 15   **Submitting** a text entry box, a website url, or a file upload

Classifying Flowers using Transfer Learning in Keras

1- Download a small flower dataset (http://download.tensorflow.org/example_images/flower_photos.tgz). This dataset has 5 classes (Daisy, Dandelion, Rese, Sunflower, and Tulip). Images for each class are stored in its own folder.

2- The images have different dimensions. Resize all of them to 150x150.

3- Split images to 75-25% for training and test. Make sure you have the same distribution of flower types between train and test datasets.

4- Use a VGG16 model (pre-trained on ImageNet)

5- Remove the top layers (fully connected layers)

6- Add your own fully connected layers (one with 256 nodes using 'relu' activation and output layer with 5 nodes and 'softmax' activation)

7- First, freeze all layers of VGG16, train (fine-tune) and evaluate the model. You need to pick the right hyper-parameters for your training (try with different ones)

8- Second, unfreeze the last block of VGG16 (block5), re-train and evaluate the model

9- Unfreeze all the layers and try again.

10- Compare the accuracy you got in both cases . Which one is better and why?

All programs should be commented in such a manner as to clearly describe the purpose of the code used to accomplish the purpose. Also, make sure to provide a brief and clear interpretations of the results.

General best practices for assignments:

- Program factored into appropriate functions

- Functions have appropriate length and complexity

- Clear function, parameter, and variable names used

- Program is easy to read and understand (i.e. proper documentation)

Proper documentation

Comments must provide the understanding of a program by briefly pointing out details or by providing a larger-scale view of the proceedings.
Please see below some considerations for better documentation of your assignments:
- Documentation and comments that describe the *purpose* of the code and *why* it does thing. Example: include a sentence describing the purpose and contextualizing (give preconditions and postconditions of each function) the purpose of the program unit in simple language.
- Consistent indentation and formatting of code blocks to make the structure of the code visible
- Interpretation of the results in simple language and implications if any.

A2			
Criteria	**Ratings**		**Pts**
Data Preparation	1.0 pts Full Marks	0.0 pts No Marks	1.0 pts
Model1	3.0 pts Full Marks	0.0 pts No Marks	3.0 pts
Model2	4.0 pts Full Marks	0.0 pts No Marks	4.0 pts
Model3	4.0 pts Full Marks	0.0 pts No Marks	4.0 pts
Comparison	1.0 pts Full Marks	0.0 pts No Marks	1.0 pts
Explanations and interpretations All programs should be commented in such a manner as to clearly and briefly describe the purpose of the code used to accomplish the purpose as well as a brief and clear interpretations of the results.	2.0 pts Full Marks	0.0 pts No Marks	2.0 pts
			Total Points: 15.0

Submission

✓ **Submitted!**
Oct 26 at 10:47am
Submission Details
Download
TERZIOGLU_Kerim_Assignment2.ipynb

Grade: 15 (15 pts possible)
Graded Anonymously: no

Comments:
No Comments