

TIES 4911 (2024): Guidelines for the Task 4

Your surname:
Your first name:



Study lecture materials... Refer to the examples in the materials to complete following sub-tasks:

Task 4-1: Use available Keras Applications models (try at least 3) to compare their performance on image classification task. Be creative and try also some tricky images. Results present in a table in .ppt file.

Task 4-2: Use available Keras Applications models (try at least 3) to apply transfer learning with own chosen training dataset. Play with frozen layers and with the trainable layers to see difference in performance. Results present in a table in .ppt file.

Task 4-3: Create a customized image classification service:

- Chose a domain and prepare a set of images that will represent several classes similarly to the case with flowers (Lecture 4).
- Retrain the model based on prepared image set.
- Build a restful service following the given example in the lecture materials.
- Get ready to present the service performance via Postman or implement own simple client with human friendly GUI for the service (will be appreciated 😊)

Extra task for those who are aiming higher (optional):

Task 4-4 extra:

- Modify service to support multi-label image classification. Extend results of sub-task 4-3 and implement multi-label image classification following the tutorials:
<https://towardsdatascience.com/multi-label-image-classification-with-inception-net-cbb2ee538e30>
<https://www.analyticsvidhya.com/blog/2019/04/build-first-multi-label-image-classification-model-python/>
<https://machinelearningmastery.com/multi-label-classification-with-deep-learning/>
<https://machinelearningmastery.com/how-to-develop-a-convolutional-neural-network-to-classify-satellite-photos-of-the-amazon-rainforest/>
or any other source you may find (please include link to the tutorial into the report)

Files to include in the demo results (archive file `ties4911-task04-(your_surname).zip`):

- *Task4-instructions.doc (this file)*
- *PPT presentation with relevant information (data sets, restful service API, service performance screenshots, etc.)*
- *used datasets*
- *source codes*

Send the results as an archive to lecturer (oleksiy . khriyenko @ jyu . fi) before the deadline (end of 29.02.2024).

Results should be present during the Demo-4 Session. Be sure that you have all the necessary adapters to connect your computer in the classroom (if applicable).