Hochschule Karlsruhe
Technik und Wirtschaft
UNIVERSITY OF APPLIED SCIENCES

CC Center of Competence

Machine Learning in Python
Final Project

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Task definition

Solve the following task using Python. Submit your Python code and answers using ILIAS. You can use Jupyter or any editor of your choice.
Write your Name and Email address on your submission. This project is going to be evaluated. The evaluation of your submission is among others based on Correctness, Documentation, Efficiency and Performance. In case of questions, feel free to contact me by email `tobias.weller@hs-karlsruhe.de` or use the forum.
Submission deadline is: 12. February 2021.

Task - Image Classification

Given are the images of Dogs, Cats and Pandas in *data.zip*. The images are stored in the corresponding folders. Create a Machine Learning Model that classifies the images according to the animals (dog, cat, panda) shown in the image. The evaluation criteria is the accuracy achieved on the training and test set. Print out the accuracy achieved on both sets.

The provided file (project.py) already contains a first code to read the images into *X_train, X_test, y_train and y_test*. You can use this and train your machine learning model, based on the data.

Note: You can, but do not have to, use pre-trained ML models from the internet. But in order to achieve a high accuracy, a pre-trained ML model is recommended.

Note: Feel free to try out not only VGG16, as in the lecture, but different advanced pre-trained CNN Models like e.g. ResNet152[1]

Note: Using google colab for learning the machine learning model is highly recommended, as learning the model on a local machine is very time-consuming.

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[1] `https://www.tensorflow.org/api_docs/python/tf/keras/applications/ResNet152`