ep Learning Project: Sports Image Classification

In today's world of internet, a massive amount of data is getting generated every day and content-based classification of images is becoming an essential aspect for efficient retrieval of images and have attracted application in several fields and one of such field is sports. Building a model that is able to classify different sports activities into different categories could be useful for automated sports analysis tasks.

You are provided a dataset that contains 6 sports classes: Basketball, Football , Rowing, Swimming, Tennis and Yoga. This dataset is divided into training and testing sets. You are provided with the labels for the training set in the image names while the test set is unlabeled to be used for the Kaggle competition.

(Take note that some images are PNG and some are JPG and the images are of different sizes)

Deep Learning Competition

- **Competition link** (You must use this link to be able to join the competition): https://www.kaggle.com/t/f3e7c2ff1eff448c94b0f7753ddff60d
- **Competition Rules:**
  - **One account per team participant** : You cannot sign up to Kaggle from multiple accounts and therefore you can submit only from one account.
  - The **team name** on Kaggle should be the **same Team ID** as the one given to you [here].
  - **No private sharing** outside teams : Any form of cheating or illegal behavior will lead to being disqualified and losing the project grades.
  - **Keras.application IS NOT ALLOWED**
- **Submission Limits**
  - You may submit a maximum of 5 entries per day.
  - You may select up to 2 final submissions for judging.

- **Competition Timeline**
  - Start Date: 2/12/2022
  - End Date: The earlier practical exam date from all departments.

Deep Learning Competition

- **You must register and submit your results on Kaggle website.**

- **You will be given a small test sample on the practical exam day**, so each team needs to save the weights of the network used during training and create a script that loads the weights, generates a csv file containing the predicted labels for the test samples. Note that on the practical exam day, the test script needs to run on your laptop or if you want to use Colab/Kaggle for the test, make sure to have a very good internet connection as it is not guaranteed that it would be available in the lab.

- If you trained the models using a notebook, you must deliver the notebook with the output cell saved displaying the training logs. If you trained the model using IDE (i.e Pycharm). You must deliver screenshots of the training process

- **The evaluation of the project will be on the following items**:-
  - Building multiple appropriate models (at least two) and understanding each part of it (CNN, Inception, ...)
  - Applying the appropriate data preparation steps
  - The achieved accuracy on Kaggle
  - Deliver a detailed report of all trials and your conclusion from these trials

Resources

TensorFlow: https://www.tensorflow.org/guide/low_level_intro

TensorBoard:https://www.tensorflow.org/guide/summaries_and_tensorboard

TFLearn: http://tflearn.org

OpenCV: https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_tutorials.html

Good explanation for CNN : https://medium.com/technologymadeeasy/the-best-explanation-of-convolutional-neural-networks-on-the-internet-fbb8b1ad5df8

Kaggle dog-cat classification problem : https://www.kaggle.com/c/dogs-vs-cats