# Assignment 3: Deep Learning

Submission: Tuesday May 22nd
3 students per group

Prof. Fabio A. González

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Download the dataset MM-IMDB from `https://www.kaggle.com/johnarevalo/datasets`. The dataset includes poster images from movies of different genres as well as the text of the corresponding synopses.

We will train different multi-label classification models that only use the poster image as input. The models must be evaluated using the approach of this paper: `https://arxiv.org/abs/1702.01992`.

1. **Fine tune a Visual Transformer model**

   Follow the instructions in this blog post: `https://huggingface.co/blog/fine-tune-vit` to train a multi-label annotation model over the MM-IMDB training dataset. Report the results on the test dataset.

2. **Fine tune a ConvNeXT model**

   The model can be found in `https://huggingface.co/docs/transformers/model_doc/convnext`. Fine tune it as a multi-label annotation model over the MM-IMDB training dataset. Report the results on the test dataset.

3. **Build a zero-shot classification model based on CLIP**

   CLIP is a foundational image-text multimodal model that allows zero-shot learning `https://github.com/openai/CLIP`. The idea is to use a pretrained model (eg. `https://huggingface.co/docs/transformers/model_doc/clip`) to build a multilabel classification model for the MM-IMDB dataset. You do not need to fine tune the model, just use it to build your multi-label classification model designing text queries for movie posters. Report the results on on both the training and test datasets.

4. Discuss the results and draw conclusions from all the experiments.

The assignment must be submitted as a Jupyter notebook through the following Dropbox file request, before midnight of the deadline date. The file must be named as `ml-assign3-unalusername1-unalusername2-unalusername3.ipynb`, where `unalusername` is the user name assigned by the university (include the usernames of all the members of the group). You do not need to submit additional files all the detail must be included in the notebook. Make sure that the notebook renders correctly and is free of errors before submitting.