Welcome to the Machine Learning Assignment for this season 2024-2025!

This season will be focused on practical issues about Image Classification.

The assignment will consist of run a Machine Learning model to clasify a dataset with pictures. You'll do it adapting the "Clasifying Outfit with Pytorch" to run an image classification problem chosen by you.

You can choose any of the dataset provided by Pytorch in its Torchvision module to hand in the assignment. Torchvision is plenty of datasets you can play with. Please visit the following link to have a glance at them:

https://pytorch.org/vision/0.19/datasets.htmlLinks to an external site.

How do I do the assignment?

These are the instructions you'll follow to hand in your assignment.

1. Form a team with your colleagues. Please, no more than four members in each team.

2. Nominate a speaker, he or she will be in charge of presenting your work at then end of the assignment.

3. Send me a meesage with the team members. Please specify who will be the speaker.

4. From the Datasets provided by the TorchVision module, choose one of it. If you want to choose another dataset from a different source, feel free to do it!

5. Adapt the code studied in the "Clasisfying Outfit with Pytorch" lesson to deal with the chosen dataset.

6. Build your own Machine Learning model to run the classification, more than one Machine Learning model will be rewarded.

7. Train the model.

8. Test the model, present the results of the testing (choose a metric a explain the results in terms of the chosen metric).

9. Load your own picture a check out how the model works.

What should I hand in as the evidence of my assignment?

Every single member of the team, I repeat **every single member of the team must upload the following files to CANVAS:**

1. The code the team has written down to run the model.

2. The presentation (PowerPoint, Canva, ...) the speaker will follow to show your work.

I repeat again, every single member of the team must upload the files mentioned above. I will not assess the work of the student who hasn't upload the files mentioned above.

The code must be written in Python, using Pytorch framework. You can reuse the code we've studied in the "Clasifying Outfit with Pytorch" lesson.

How will you evaluate the assignment?

After the due date, I will summon every team to evaluate the assignment. Here it it the procedure I'll follow to do it:

1. The speaker will show the presentation explaining the work the team has done. The presentation must contain the following topics:

1.1 A detailed explanation of the dataset you've chosen (number of observations, how the picture is formed, how the dataset represents the labels, train/test split)

1.2 A description of the Machine Learning model you've built.

1.2 A description of the training stage (learning rate, number of epochs, loss function chosen, optimizacion function) and any interesting topic you'll consider it's worth mentioning it.

1.3 A description of the testing results.

1.4 A description of the picture you've chosen. Has the model capture what the picture you've uploaded it is?

2. The speaker will run the whole code the team has uploaded to Canvas. The code must run end-to-end. **If the code doesn't run, the team presentation will finish and the team will not pass the assignment.**

3. After we've seen runs properly, I will ask threes question to every single member of the team but the speaker. The speaker doesn't need to ask any question. With these questions I want to check out if every single member of the team properly knows the code.

How will you evaluate the assignment?

The code will be evaluated as following:

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    - The code doesn't run. The team doesn't pass the assignment and therefore the course. The must repeat the assignment in June (Exam score will be kept).
    - **2 pts:** the code runs properly.
    - **3 pts:** quality of the presentation. Clarity and accuracy in the presentation will be positive evaluated.
    - **3 pts**: individual questions made to the every single member of the team. The speaker will have by default these 3 pts witout questions. If the team member is not able to answer any of the three questions, these team member will not pass the assignment and he or she will try it again in June.
    - **2 pts**: addition improvements in the model. If the team has gone beyond and has made an effort to improve the quality of the given code in the lesson "Clasifying Outfit with Pytorch" you'll be rewarded with these 2 additional points (for example data augmentation, a detailed metric study, you've traied different models...)