This file contains information/guide about the tasks that will be carried out in this lab. The image below contains the structure of the code/repository. Take a moment to understand what each file or folder does.

A screenshot of a computer program

Description automatically generated

Explore the cloned repository; you will find the **configuration folder (configs)** that contains the files responsible for **model and training parameters**. In this exercise, we will investigate what each file or parameter does by answering some questions.

**Key things to note:**

Running an experiment is as easy as running the command ``` **python train.py**```. This simply means that we want to run the experiment with all the default configurations. It is the same as writing ``` **python train.py model=default train=default mlflow=default**```.

**Part 1: Models and Data**

Remember to mark your answers, you will need the indices to unlock the zipped files.

1. Assume that we want to run an experiment using the default model and mlflow parameters but with some modifications to training parameters e.g. number of epochs. Which of these would be appropriate?
2. python train.py model=default train.epochs=50
3. python train.py train=default model.epochs=50
4. python train.py model=default config.epoch=50
5. python train.py train.epoch=50
6. Explore the parameters of the mlflow config, assume that we want to change the server used to log the experiments, what parameter(s) do we need to change?
7. tracking\_uri
8. experiment\_name
9. ckpt\_path
10. eval\_checkpoint
11. Explore the models’ default configuration file, assume that we want to change the model to train, which of these would be appropriate?
12. experiment\_name
13. model\_name
14. ckpt\_path
15. name
16. Using the answer above, how would we run a new experiment with a new model?
17. python train.py model.model\_name=mobilenetv3
18. python train.py model.experiment\_name=mobilenetv3
19. python train.py model.ckpt\_name=mobilenetv3
20. python train.py model.name=mobilenetv3

You are now familiar with what a configuration file does and how to run multiple experiments. Congratulations!

The indices of your answers above unlock the data&models.rar and train&trainer.rar

For instance, 1234

**Part 2: Utils, Evaluate and Test**

Description: Now that you have access to the following files: data.py, train.py, models.py, and trainer.py, move them to the appropriate folder (src) and take some time to investigate their contents. Specifically, the train and trainer.py files.

1. The trainer.py file contains helper functions used in the train.py file and is responsible for training and validating the model at each epoch. In the trainer file, mlflow logs some **parameters**, which of these includes some of the parameters?
2. Model Name, Batch Size, Loss, Optimizer, Checkpoint
3. Checkpoint, metric, Model name, optimizer
4. Optimizer, loss, Model name, Learning rate, device
5. Batch Size, Loss, Optimizer, metric, weights
6. In the train.py file, what sets of models are defined and what parameter of the models determines the number of classes?
7. Mobilenetv2 and Mobilenetv3 -> output
8. Efficientnet and Mobilenet -> classes
9. Mobilenetv2 and Mobilenetv3 -> classes
10. Efficientnet and Mobilenet -> output

The indices of your answers above unlock the others.rar file.

For instance, 12

**Time to run an experiment!!**

Move to **Section 4** of the **instructions.ipynb** file and proceed to run your first experiment.