**PE02: Programming Exercise**

**Instruction**

**Train and Test Simple Machine Learning Model in Docker**

1. Install Docker locally.
2. Train a machine learning model (can be any ML model) with a small dataset in docker.
   1. The base image can be `jupyter/scipy-notebook`. It will help you save time in installing basic ML libraries.
   2. Save the trained model for step 3.
3. Test the trained model above with a small test dataset in docker.
4. Mount a local folder in your machine to store pending test dataset files.
   1. With this step, you can test any dataset file in your machine with docker
5. Host a flask app in docker so that you can pass the test dataset file name to test the trained model performance.

HINT:

* For step 2 and step 3, you are welcome to set up everything (like simple ML model implementation etc.) by yourself. But if you find it’s a little hard, feel free to reference existing implementations on the internet. Please quote where you referenced the implementation in your GitHub repo.
  + Good examples you could follow are:   
    - <https://towardsdatascience.com/build-and-run-a-docker-container-for-your-machine-learning-model-60209c2d7a7f>- <https://blog.logrocket.com/build-deploy-flask-app-using-docker/>
* Step 5 is literately asking you to make step 3 a Flask app to flexibly test your model. We have PE01, where you have learned how to make a Flask app.

**Your task for PE02 is to:**

1. Finish the above implementation.
2. After completing step 5, what else do you think are needed for MLOps? Please provide a 50 to 100 words write-up on this question.

**Submit the items below to the PE submission page:**

1. The GitHub link to store your implementation.
2. 50 to 100 words write-up for task 2.
3. Please provide screenshots after completing steps 2, 3, 4, and 5. Also, provide a 100 to 150 words overall analysis or feelings for setting up the ML model with docker.
   * Make sure the PE module number and your name are written on the file name, e.g., "*PE02\_Name.docx").*