# DA5402: Assignment 8

We learned about how to track experiments using MLflow. We also learned about the MLproject ecosystem and how MLflow can automatically package model into an inference API. Let's put all these ideas to use.

Consider the following code base to build a handwriting recognition model using the tensorflow/keras combination.

https://keras.io/examples/vision/handwriting_recognition/

## Task 1 [30 points]

Setup the MLflow ecosystem and ensure that you are able to reproduce the examples that were shown in the class for tracking, API packaging and MLprojects [no points for this!]. Now, refactor the handwriting recognition codebase to infuse MLflow tracking to track the metrics, parameters, models, and other relevant artifacts. Add logging and exception handling as necessary. Repea the model build at least 3 times by changing the train-val-test splits. Register the respective model versions. Generate the following graphs:

1. Epochs vs Training & Validation losses
2. Epochs vs Average Edit distance

## Task 2 [20 points]

Use the MLflow APIfication to expose the handwritting recognition model (the most performant version) as a REST API. You should demonstrate the handwriting recognition ability by inputting an image of from test dataset and the API end point should return the extracted text from the image. You may use Postman or curl as your API client to send the image to the API service.

## Brownie [10 points]

Convert the Task 2 objective into an MLproject. You should write an explicit code block to load the model and infer in the input image into a text. The input image for handwritting recognition should be a command line argument (via -P option to mlflow run command).