

## Prediction Challenge 1 – Deep Learning

### Description

Image classification with a feed forward deep neural network, using tuning techniques to improve the accuracy.

Design your own feed forward deep neural network to classify images from the Fashion-MNIST dataset. Use the RELU activation function and the Adam optimiser. Change the other parameters of the network and hyperparameters to achieve the best accuracy.

### Data

Use the Fashion-MNIST dataset that is available from the Keras API. Information about the Fashion-MNIST dataset and how to load it from the Keras API can be found via the following link.

[Fashion MNIST dataset, an alternative to MNIST \(keras.io\)](https://keras.io/datasets/fashion-mnist/)

### Submission

Provide one Word or PDF document with the following:

1. Validation Accuracy Number obtained from here in your training output of your model:

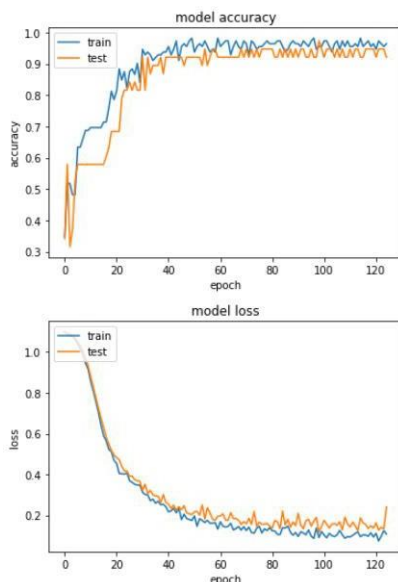
```
Epoch 22/25
1875/1875 [=====] - 9s 5ms/step - loss: 0.2149 - accuracy: 0.9250 - val_loss: 0.6044 - val_accuracy: 0.8757
Epoch 23/25
1875/1875 [=====] - 9s 5ms/step - loss: 0.2072 - accuracy: 0.9271 - val_loss: 0.6401 - val_accuracy: 0.8660
Epoch 24/25
1875/1875 [=====] - 9s 5ms/step - loss: 0.2047 - accuracy: 0.9277 - val_loss: 0.6255 - val_accuracy: 0.8725
Epoch 25/25
1875/1875 [=====] - 9s 5ms/step - loss: 0.1976 - accuracy: 0.9295 - val_loss: 0.7636 - val_accuracy: 0.8639
```

2. Screen print of the Keras summary of your deep neural network i.e.

Layer (type)	Output Shape	Param #
dense_2 (Dense)	(None, 10)	50
dense_3 (Dense)	(None, 3)	33

Total params: 83  
Trainable params: 83  
Non-trainable params: 0

3. A screen print of the model accuracy and loss plots



4. A 300 word (max) blog critically appraising your choice of model parameters and hyperparameters

**Important Note:** Submit your work as a zipped folder via the link provided on Moodle (Prediction Challenge 1 Submission). Your zipped folder MUST have two items namely: your code downloaded from Colab as **.ipynb** and your word or pdf file that contains the above screen prints plus your 300-word (maximum) that critically appraised your model. Also, the zipped folder should be named using the following format **StudetName\_studentID.zip**

For example: **AliyudaAli\_123456789.zip**