Machine Learning

**Deep Learning Fashion Mnist Data**

horizontal line

# Introduction

We have created 3 deep-learning models in this project using the Fashion \_Mnist dataset. The Fashion MNIST dataset contains labeled images of handwritten digits in the training data and unlabeled images of handwritten digits in the testing data. At the end of all the 3 models we are averaging the 3 models accuracy.

# Model1:

1. Using Sequential model
2. Add flatten layer to convert 1 dimensional
3. Add 1 dense layer with activation **Relu**
4. Output layer with 10 as the we have 10 variables
5. Model **accuracy** **0.7966 and loss 0.59**

# Model2:

1. Using Sequential model
2. Add flatten layer to convert 1 dimensional
3. Add 1 dense layer with activation **Sigmod**
4. Output layer with 10 as the we have 10 variables
5. Model **accuracy** **0.7059 and loss 0.9158**

# From above model relu has better performance

# 

# Model3:

1. Using Sequential model
2. Add flatten layer to convert 1 dimensional
3. Add 1 dense layer of 100 neurons with activation **Relu**
4. Add 1 dense layer of 300 neurons with activation **Relu**
5. Add batch normalization layer
6. Add dropout layer with rate 0.25
7. Output layer with 10 as the we have 10 variables
8. Model **accuracy** **0.881 and loss 0.355**

# Combined Model:

1. After combining all 3 models i.e) model1, model2 and model3
2. We got **accuracy** **0.794**

# Conclusion:

After 3 models, we conclude that the model 3 has the best score and is better tuned than the other models. Relu is better suit for the this model than the sigmod function. So the combined model is average of all the 3 model which is little less than the model3.