Advanced Deep Learning
AIGC 5500
Lab 03
Saturated Neurons and Vanishing Gradients

Start by creating a Python notebook named <FirstName_LastName.ipynb> (e.g., Hossein_Pourmodheji.ipynb). Organize the notebook into clear sections for better readability.

Utilize the techniques you have learned in this course so far, including Weight Initialization, Input Standardization, and Batch Normalization, to train a feedforward fully connected neural network on the Fashion MNIST dataset (alternative link provided). Aim to achieve a test accuracy of at least 91.00%. You may use either TensorFlow/Keras or PyTorch, but avoid using Convolutional Neural Networks (CNNs).

At the end of the notebook, take some time to reflect on how weight initialization, input standardization, and batch normalization contributed to improving test accuracy. Discuss any challenges you encountered while trying to reach the 91.00% test accuracy goal and describe the strategies you used to overcome them. Consider aspects such as tuning hyperparameters, adjusting network architecture, or optimizing training techniques.

Deliverables:

When you're done, save the notebook with all your code, plots, and comments. Export the notebook to a PDF format. Submit both the .ipynb file and the PDF for evaluation. Make sure your work is well-organized and readable.