Machine Learning Coursework – Image Classification Project

Title: "Fashion Image Classification using Convolutional Neural Networks (CNNs)"

Description:

In this assignment, you are required to build a CNN-based image classification model that can automatically identify fashion items from images. You will use the Fashion-MNIST dataset provided by Zalando Research, which contains grayscale images of 10 fashion categories such as T-shirts, trousers, sneakers, and bags.

Your task is to preprocess the data, design a CNN architecture using TensorFlow or PyTorch, train and evaluate your model, and visualize the results. You should experiment with at least three different architectures and hyperparameter settings.

The report should include an introduction, dataset exploration, model architecture details, training process, evaluation metrics (accuracy, loss curves, confusion matrix), and a discussion of performance trade-offs.

Finally, you must save the trained model and provide a short reflection on potential improvements and ethical considerations when using AI for automated decision-making in the fashion industry.