Assignment 4: Comparing Optimizers in Neural Network Training

Assignment Description

In this assignment, you will compare the performance of different optimizers on the Fashion MNIST dataset using a Google Colab notebook.
We have written a code for you here:
  Click here to access.

1. **Task:** Implement and test the following optimizers in your notebook:

   - SGD (Stochastic Gradient Descent)
   - Adam
   - RMSprop
   - Adagrad

2. **Procedure:** Follow these steps:

   - Open the provided Google Colab notebook provided above
   - Run the notebook and observe the training and validation loss plots for each optimizer across epochs.
   - Record your observations for each optimizer regarding their convergence speed, stability, and final performance.

- Provide explanations for why each optimizer behaves as observed based on their respective update rules and characteristics.

3. **Deliverables:**

   - A report summarizing your findings, including plots of training and validation loss curves for each optimizer.

   - Detailed comments on the observed behavior of each optimizer, explaining the reasons behind the observed performance differences.

Submission Guidelines

Submit your report along with any additional analysis or insights you find relevant.