

Task 5.2: MLP Model for Digit Recognition on Permuted MNIST

This report presents the results of an experiment involving the recognition and classification of digits in the Permuted MNIST dataset. In Permuted MNIST, the pixels of each image are randomly permuted, which challenges the model to recognize digits without relying on the spatial relationships between pixels. The focus is on implementing and training an MLP (Multi-Layer Perceptron) model to address this task.

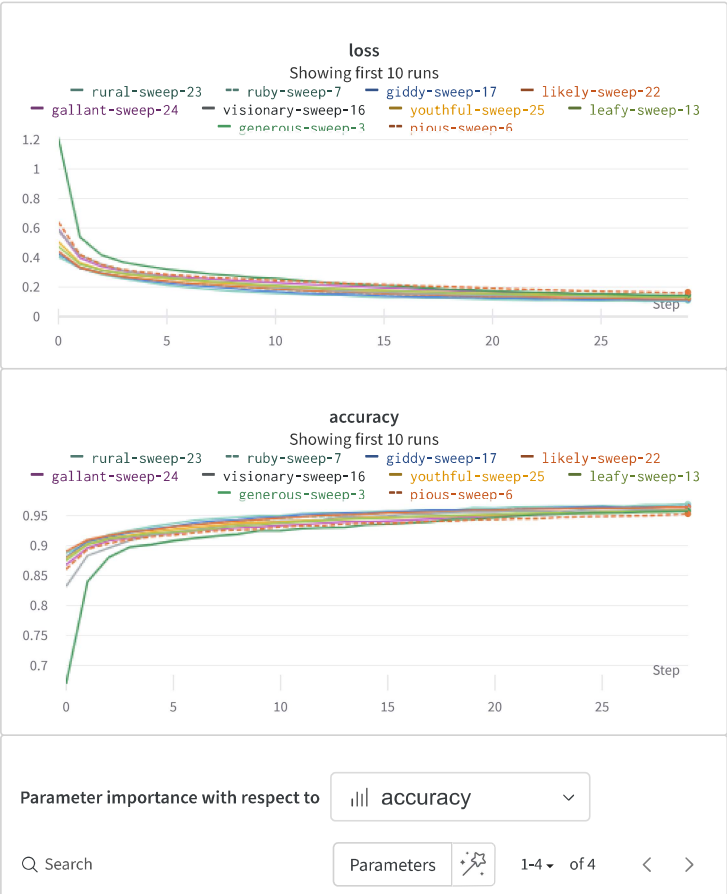
Anushka Agrawal

Implementation:

An MLP model was designed and trained for the Permuted MNIST dataset. The model architecture comprises input layers for image data and multiple hidden layers. The following hyperparameters were tuned to optimize the model's performance:

- Number of hidden layers.
- Number of neurons within each hidden layer.
- batch size

Graphical Analysis:



Config parameter	Importance ⓘ ↓	Correlation
batch_size		
Runtime		
hidden_layer_neurons		
hidden_layer		

☒

Run set 26

⋮

Analysis:


- hidden layers: the model works best for 2-3 no of hidden layers

- hidden layer neurons: a higher count of neurons about 60 helps in better recognition of the digits from the image dataset
- batch size: decent batch size of 32-64 works best for the model, it converges fast too

The best set of hyperparameter we get are:

- hidden layers: 3
- hidden layer neurons: 60
- batch size: 32

From these set of hyperparameter we get a accuracy of 96.9% and loss of 1.098

Created with  on Weights & Biases.

<https://wandb.ai/anushka-agrawal/5.2-MLP-classification/reports/Task-5-2-MLP-Model-for-Digit-Recognition-on-Permuted-MNIST--Vmldzo1NzUyMDQy>