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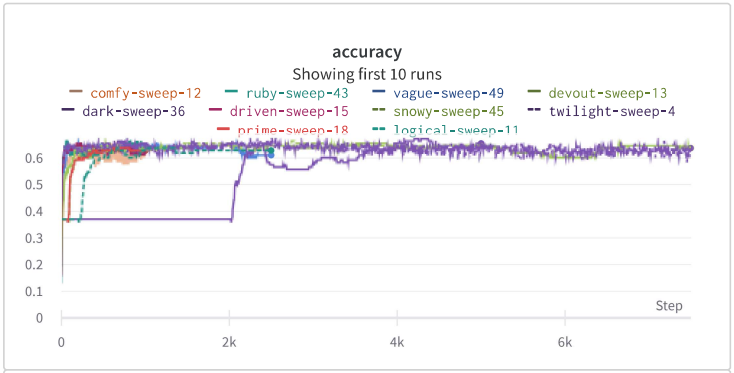
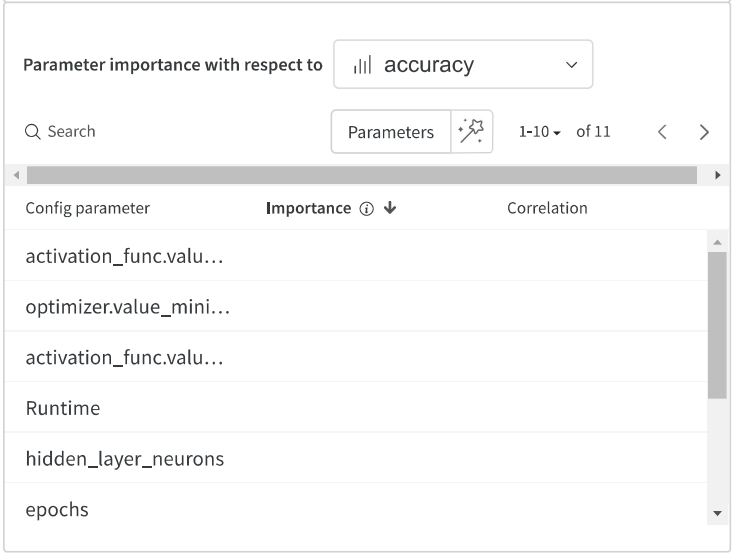
Task 2: MLP for Multi-Class Classification

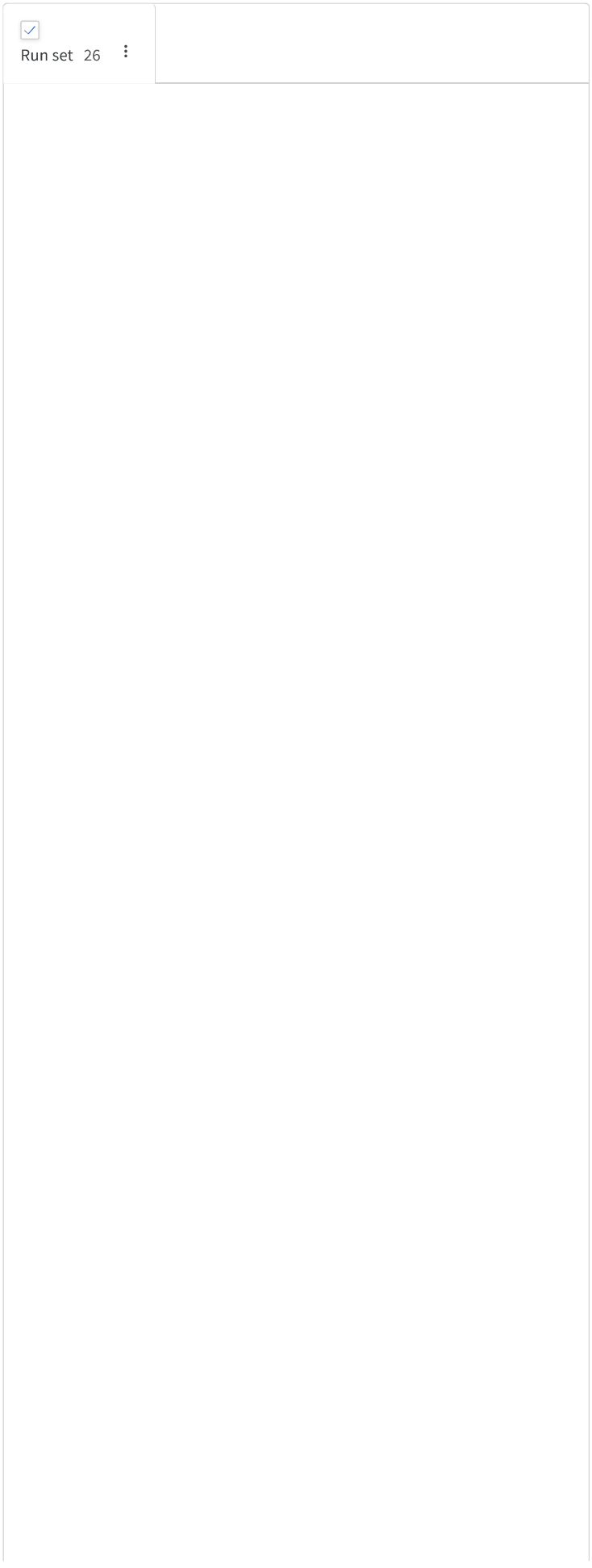
For this task we have implemented a class for MLP that is used of multi-class classification. We analyse the performance of our classifier against different set of hyperparameters. Here we vary the no of epochs, learning rate, activation functions, optimizers, no of hidden layers, and the no of neurons in the hidden layer.

Anushka Agrawal

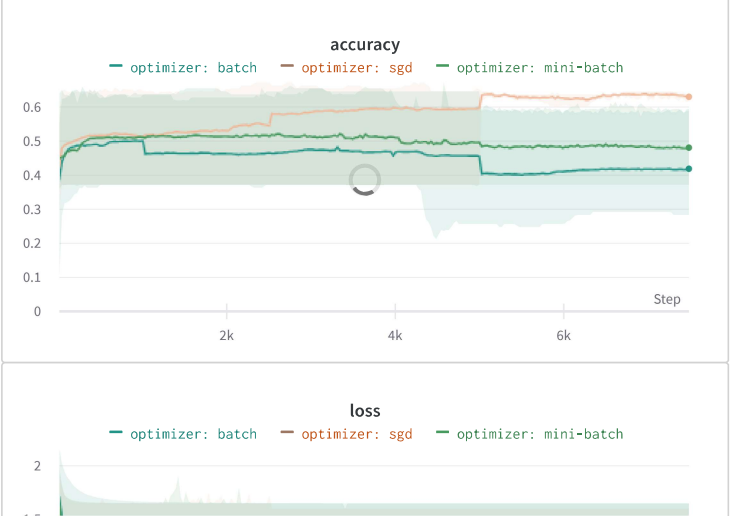
Graphical Analysis

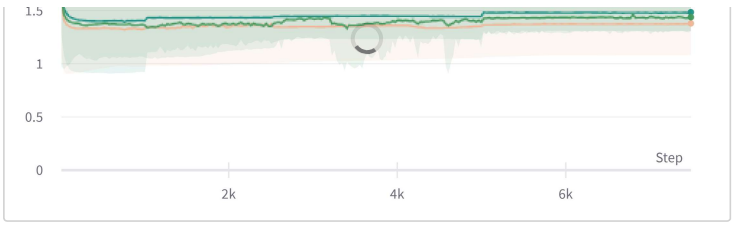




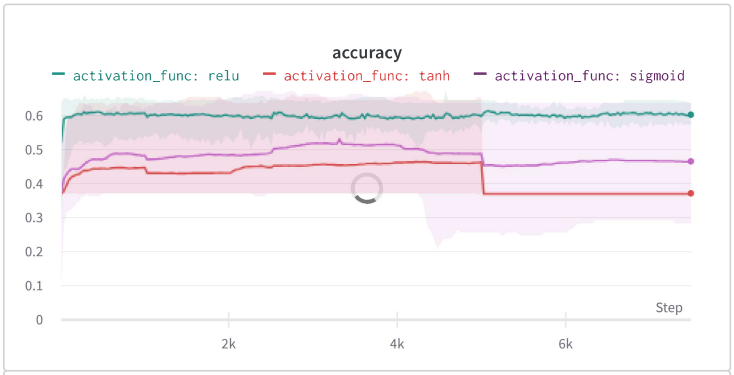

Run set 26

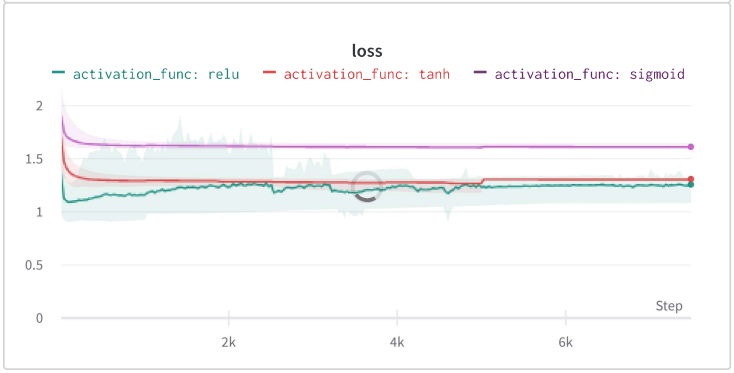
Grouped by activation functions

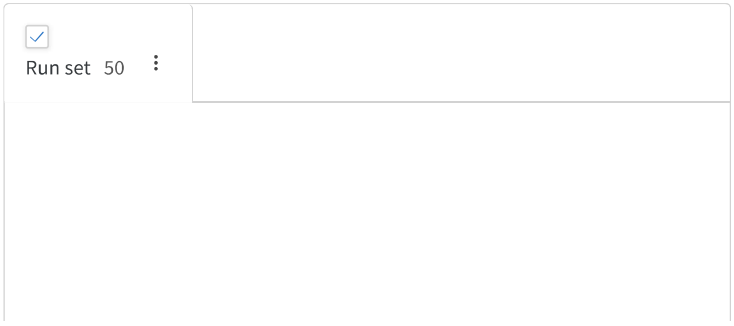




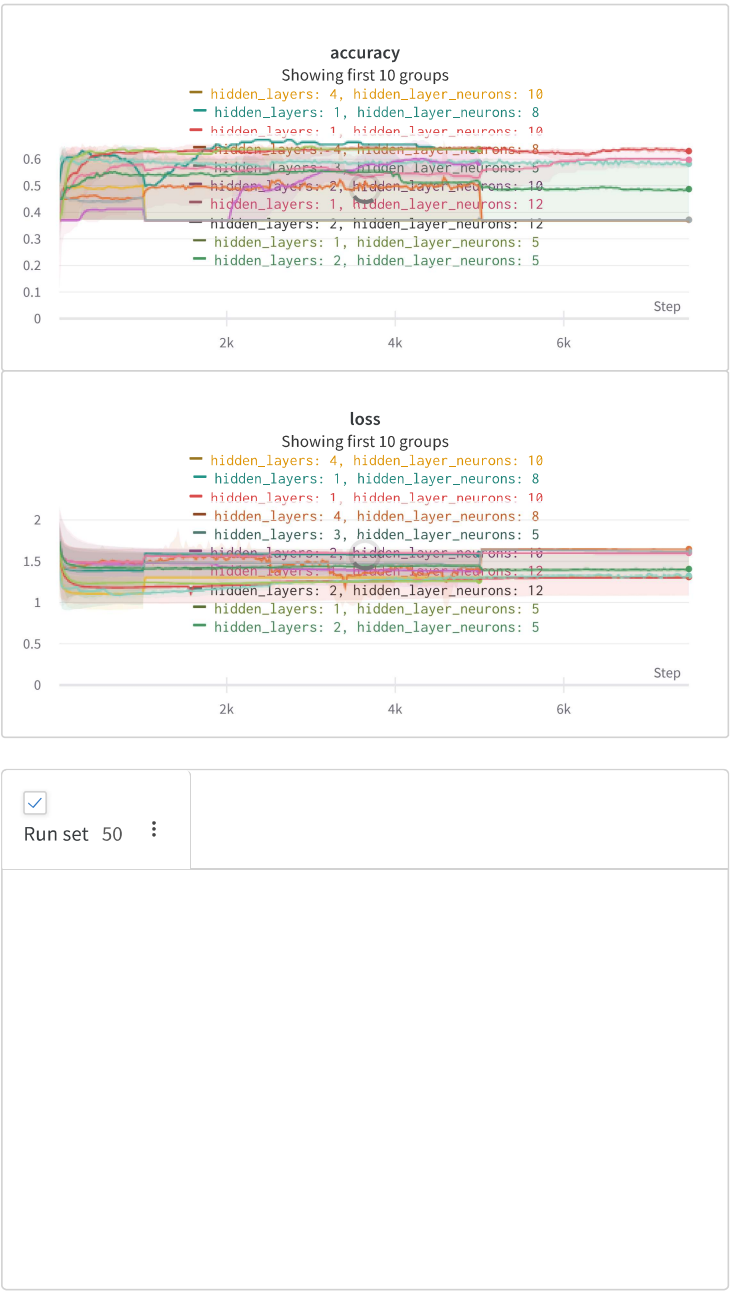
Grouped by optimisers:







Grouped by hidden layers and no of neurons in hidden layers



From the above combinations we observe that among all the activation function relu performs better than others. 'mini-batch' optimisers performs the best among the optimisers and we can have 1 to 2 hidden layers with 8-10 neurons each in the neural network to capture the relation between the input feature and output in the dataset. The best combinations of the parameters we get is activation_function = 'relu', optimiser = 'mini-btach', hidden_layers =

1, hidden_layer_neurons 10, learning rate = 0.0001, max_epochs = 7500. For this we get a accuracy of 62.8% and loss of 0.92.

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https://wandb.ai/anushka-agrawal/2.2-mlp-classification/reports/Task-2-MLP-for-Multi-Class-Classification---Vmlldzo1NzQ2MzE4