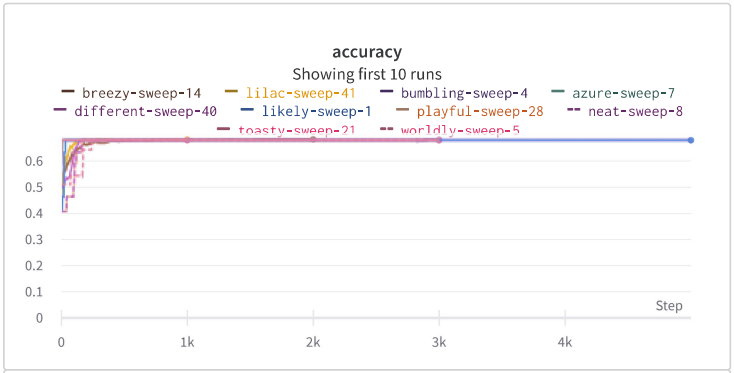
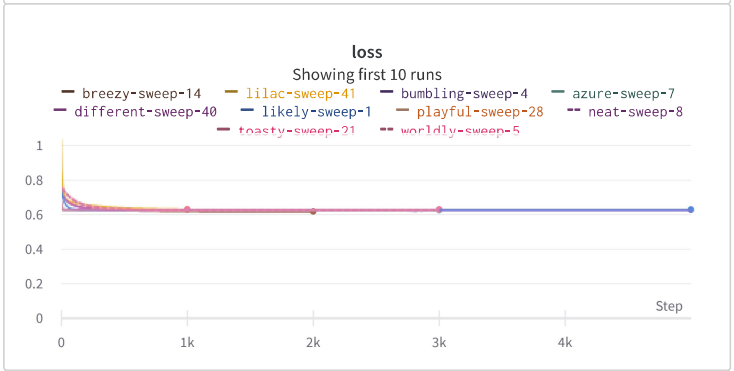
Task 2: MLP Multilabel Classification

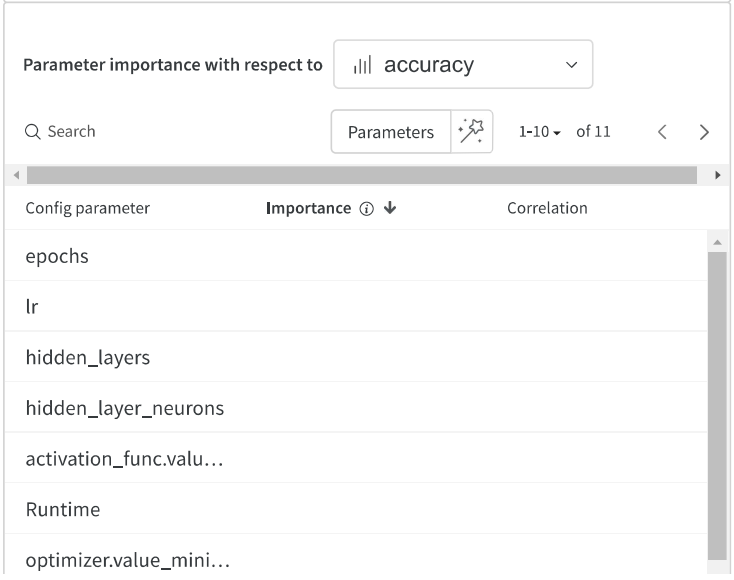
For this task we have implemented a class for MLP that is used of multi-label classification. We analyse the performance of our classifier against different set of hyperparameters. Here we vary the no of epochs, learning rate, activation functions, optimizers, no of hidden layers, and the no of neurons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

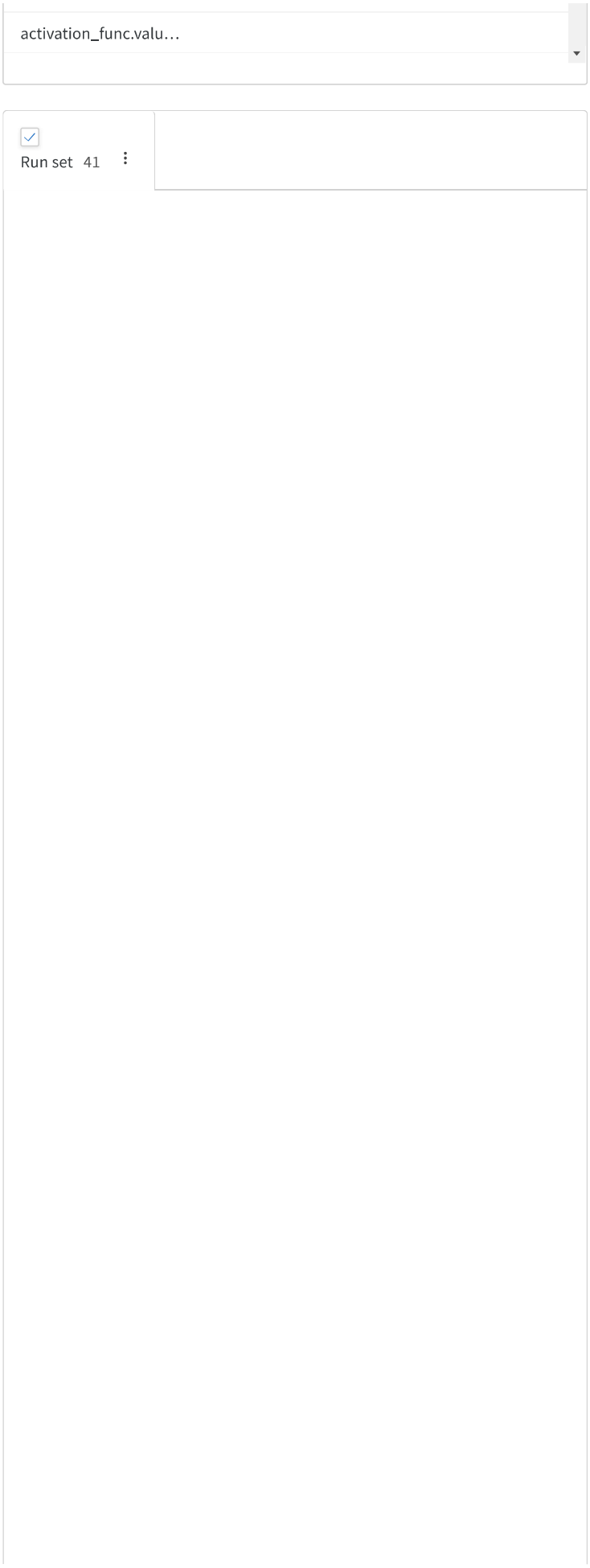
Anushka Agrawal

Graphical Analysis

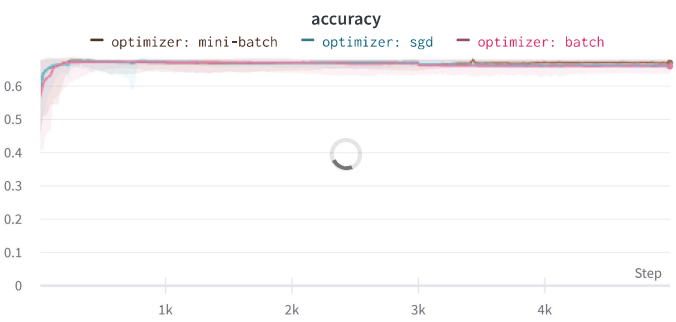


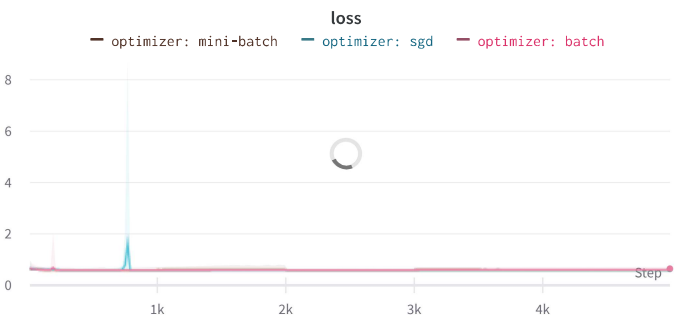





activation_func.valu…
Run set 41

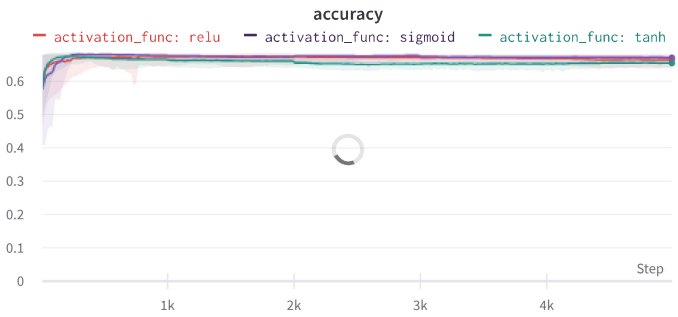
Grouped by optimiser



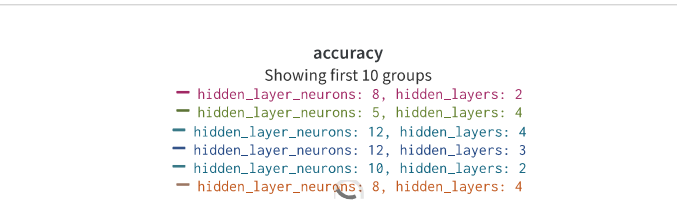


Run set 41

Group by activation function



Grouped by hidden layers, hidden layer neuron



From the above combinations we observe that among all the activation function sigmoid and relu performs better than tanh. 'mini-batch' optimisers performs the best among the optimisers and we can have 2-4 hidden layers 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-batch', hidden_layers = 3, hidden_layer_neurons = 8, learning rate = 0.0001, max_epochs = 5000. For this we get a accuracy of 68.3% and loss of 0.632.

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https://wandb.ai/anushka-agrawal/2.4-mlp-multilabel-classification/reports/Task-2-MLP-Multilabel-Classification--Vmlldzo1NzQ2NDEy