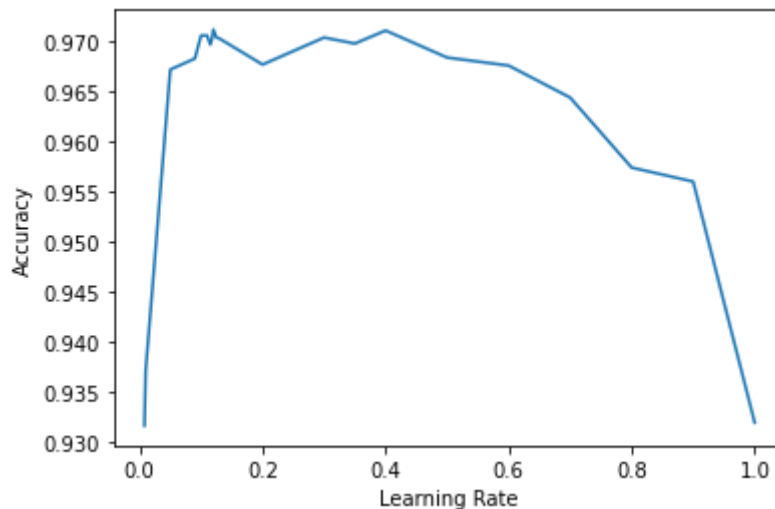


Neural Network Analysis

Varying the learning rate:



The above plot shows how the accuracy of the model varies according to the learning rate. The initially set learning rate of 0.01 (Simple neural network with cross entropy loss function and SGD optimizer) gave an accuracy of around **93.5%**. Further changes gave a maximum value of **97.12%** at a rate of 0.12. Setting a high learning rate does not give a good result and the accuracy drops very quickly once the rate crosses 0.9. At very high rates (such as 10) the model performs poorly (with an accuracy of 9.80%).

Varying other parameters:

The model's performance dropped upon changing the optimizer to 'Adam' (in pytorch). The highest value obtained using this was **87.40%** corresponding to a learning rate of 0.01.

Adding an extra hidden layer with 32 neurons helped in boosting performance at lower learning rates (around 0.008 to 0.01), with an approximate increase of **1.4%**, but the accuracy drops once the learning rate crosses 0.05, with almost **20%** decrease.

Increasing the batch size also caused around **2%** dip in accuracy of the model.

Values obtained: [Varying hyperparameters](#).