Assignment 4 (14EC35011)

1. Performance of LSTM Cell (2000 epochs)
    a. Hidden unit size = 32. Testing Accuracy = 82.8125%
    b. Hidden unit size = 64. Testing Accuracy = 85.15625%
    c. Hidden unit size = 128. Testing Accuracy = 88.28125%
    d. Hidden unit size = 256. Testing Accuracy = 87.5%
2. Performance of GRU Cell (2000 epochs)
    a. Hidden unit size = 32. Testing Accuracy = 87.5%
    b. Hidden unit size = 64. Testing Accuracy = 87.5%
    c. Hidden unit size = 128. Testing Accuracy = 88.28125%
    d. Hidden unit size = 256. Testing Accuracy = 85.8375%

It can be seen that the overall performance of GRU cell is marginally better than LSTM cell. Significant performance bump is observed for smaller unit size and no difference for 128. A drop in performance is observed for hidden unit size = 256 which may be a result of over-fitting. Upon observing the values of loss it can also be seen that the network should be trained for more number of epochs to get perfect results.

1. Performance of LSTM Cell (5000 epochs)
    a. Hidden unit size = 32. Testing Accuracy = 87.5%
    b. Hidden unit size = 64. Testing Accuracy = 88.28125%
    c. Hidden unit size = 128. Testing Accuracy = 88.28125%
    d. Hidden unit size = 256. Testing Accuracy = 87.5%
2. Performance of GRU Cell (5000 epochs)
    a. Hidden unit size = 32. Testing Accuracy = 87.5%
    b. Hidden unit size = 64. Testing Accuracy = 89.0625%
    c. Hidden unit size = 128. Testing Accuracy = 89.0625%
    d. Hidden unit size = 256. Testing Accuracy = 87.5%

After 5000 epochs the difference between the cells is not very significant. A marginal increment in performance is observed in the case of hidden unit size of 128 when compared with the neural net model. This might be because the data we are using are images and RNNs perform better in the case of sequential data.