

Laboratory 5 – Exercises

1. Create an RNN with a single recurrent layer, an input size of 2 and a hidden size of 4. The input and the initial hidden state are tensors filled with random numbers of shape `(seq_length, batch, input_size)=(5,1,2)` and `(num_layers * num_directions, batch, hidden_size)=(1,1,4)`, respectively. Print the output of the RNN.
2. Use the text of H. G. Wells' "The Time Machine" to generate 20 characters, starting from the text "traveller". Use an RNN with two recurrent layers, each having 32 hidden units. Train the model for 200 epochs, with a learning rate of 1.5, a batch size of 30, and a number of steps of 10. Print the perplexity of the model at the last epoch.
3. Use the text of H. G. Wells' "The Time Machine" to generate 35 characters, starting from the text "time". Use a GRU with three recurrent layers, each having 16 hidden units. Train the model for 300 epochs, with a learning rate of 3, a batch size of 50, and a number of steps of 15. Print the perplexity of the model at the last epoch.

