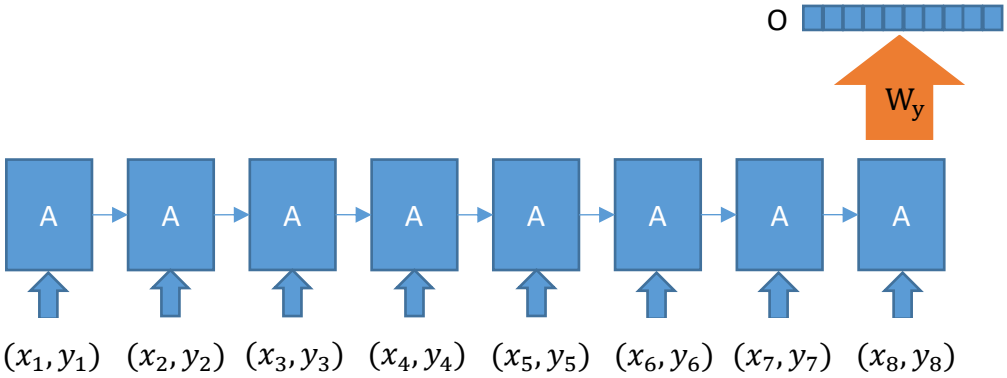
Neural Network Assignment 2:

Recurrent Neural Networks for Handwritten Numeral Recognition

Based on the Assignment 1, you have the data set of handwritten numerals, each of which contains 8 coordinates sampled along the written trajectory. Hence, these 8 coordinates compose a series of features of a numeral. Now, you are required to realize a recognizer using a recurrent neural network. The following neural network architecture is for your reference.



Description:

- A: a recurrent neural unit or an LSTM cell which contains N_h hidden neurons inside. Making a performance comparison between the RNN cell and LSTM cell would be great.
- O: the output layer containing 10 neurons whose outputs correspond to the predicted likelihood of the 10 numerals (you can try relu activation or sigmoid activation function for the neurons in this layer). Remember to find the one with the largest output as the recognition output.
- W_y: a $N_h \times 10$ hidden-to-output connection weight matrix
- Loss: computing the logits (= hidden output vector x W_y) on the output neurons, you can use either tf.nn.softmax_cross_entropy_with_logits() or tf.nn.sigmoid_cross_entropy_with_logits() as the loss function

Files you should submitted to the course website: the same as Assignment 1.