Quiz 5	**Name:** _____
Week 8, Oct./25/2022	**Student ID:** _____
CS 280: Fall 2022	**On your left:** _____
Instructor: Lan Xu	**On your right:** _____

Instructions:
Please answer the questions below. Show all your work. This is an open-book test. NO discussion/collaboration is allowed.

Problem 1. (10 points) *Transpose Convolution*

Use a 5×5 transpose convolution, stride 2 and padding 1, what is the size of the output feature map for a 5 $\times$ 5 input feature map?

Problem 2. (10 points) *LSTM*

1. Draw the diagram of LSTM, and describe the four gates (where are the gates? what is the purpose/role of each gate?).

2. Why are different activation functions used in different parts of LSTM?

3. Recall that RNNs suffer from vanishing gradients, describe how LSTMs mitigate such problem.(Hint: derive $\frac{\partial C_t}{\partial C_{t-1}}$ and decide which gate allows the network to better control the gradients)