

CSE-5368-001 Neural Networks
Fall 2023 Quiz 01

Time: 10 Minutes

Consider the following training set for a Perceptron neural network with hard-limit activation functions.

$$\left\{p_1 = \begin{bmatrix} 2 \\ -1 \end{bmatrix}, t_1 = \begin{bmatrix} 0 \\ 0 \end{bmatrix}\right\}, \left\{p_2 = \begin{bmatrix} 1 \\ -1 \end{bmatrix}, t_2 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}\right\}, \left\{p_3 = \begin{bmatrix} 2 \\ 0 \end{bmatrix}, t_3 = \begin{bmatrix} 1 \\ 0 \end{bmatrix}\right\}, \left\{p_4 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}, t_4 = \begin{bmatrix} 1 \\ 1 \end{bmatrix}\right\}$$

Design a Perceptron network with **one layer** and **two nodes** to solve this problem.

Show the weight matrix. Biases should be included in the weight matrices in the first column.