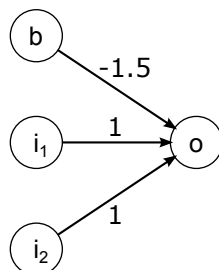


INF3490 exercises - week 4 2014

Problem 1

a) In the perceptron below, what is will the output be when the input is $(0, 0)$? How about inputs $(0, 1)$, $(1, 1)$ and $(1, 0)$? What if we change the bias weight to -0.5 ?



b) Starting with random weights, how do you proceed in order to train the perceptron above to perform any given binary operation?

\mathbb{P} c) Implement the perceptron, and train it to perform the logical functions NOT (use only one of the inputs), NAND, and NOR. What happens when you try to train it do the XOR function?

Problem 2

The figure below shows a multilayer perceptron that constructs the XOR function. How would you rewrite it to construct the binary equivalence function (i.e. the output is above threshold when both inputs are either 0 or 1)? Can you construct it so that it will detect equivalence for any combination of integer inputs?

