# 5. Introduction to Deep Neural Networks

Exercises due Mar 29, 2023 08:59 -03 Completed

## Introduction and Motivation to Deep Neural Networks



0:00 / 0:00 1.0x

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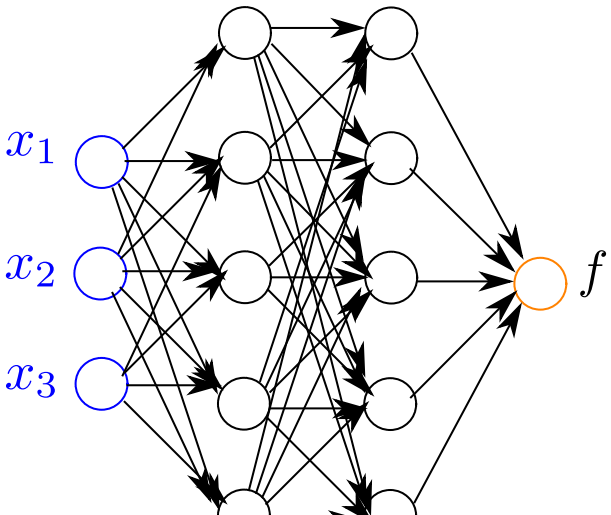
A **deep (feedforward) neural network** refers to a neural network that contains not only layers, but also hidden layers in between. For example, below is a deep feedfoward neu layers, with each hidden layer consisting of 5 units:



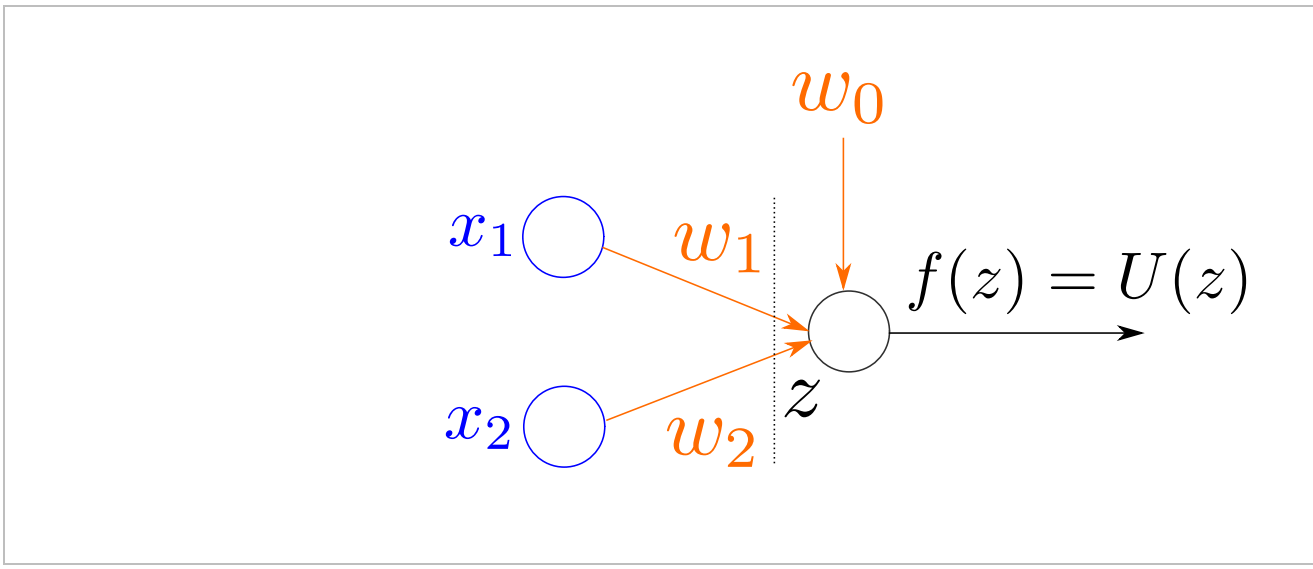
# Representation Power of Neural Networks: 1

3/3 points (graded)

In these two problems, we are going to explore how a neural network can represent any
We will start in this problem by building the logic NAND function using a simple neural n

The logic NAND function is defined as

where and are binary inputs (and denotes and denotes




We will use the above simple neural network with and the ac
chosen to be the unit step function :

Find , , and such that the output of the neural network gives the N
function of and .
(Different correct answers will be accepted.)

0.21492221260413633 ✔

-0.09205675 ✔

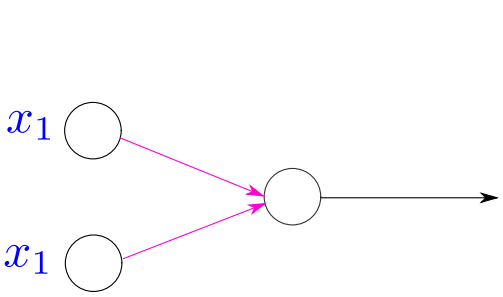
-0.15797106 ✔

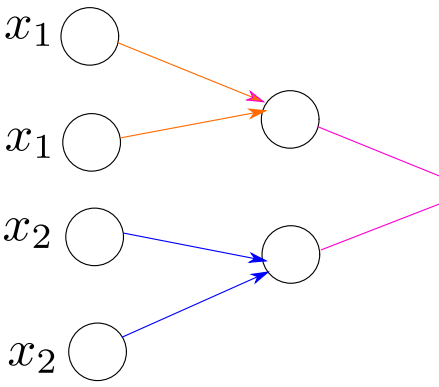
**Note:** Here, each pair of edges of the same color along with the nodes they are connec
network unit that represents the NAND function. (They do not represent values of input
example above, and are inputs to two NAND units, and are connected to output
the blue and orange arrows.

(Check that these output the correct values.)

Which logic function does each of the following neural networks implement?

(Choose one for each column.)




| | |
|---|---|
| function | function |
| function | function |
| function | function |
| function | function |

✖ ✔

‹ Previous Next ›

- why is a activation function used
  why is a activation function used
- Again, this is a confusing excercise.
  What are x1 and x2? Are those inputs or are they outputs of a NAND? According representation neural netwo
- hint
  If anyone is still confused, the wikipedia page helped me a lot: https://en.wikipedia.org/wiki/NAND_logic#XN
- if you struggle ... this table can help you quickly

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