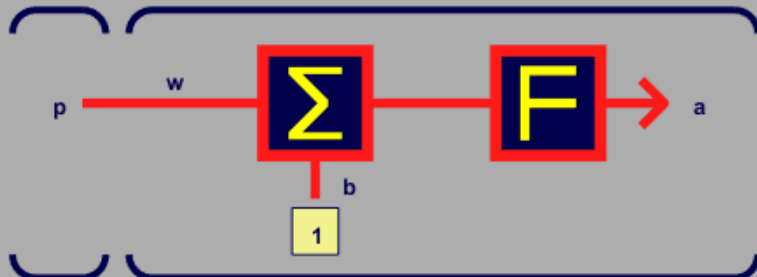


Neural Network DESIGN

One-Input Neuron



Input

Hard Limit Neuron: $a = \text{hardlim}(w \cdot p + b)$ 

w



-2 0 2

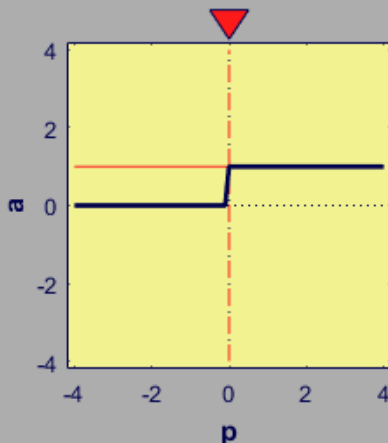
b



-2 0 2

F:

Hardlim

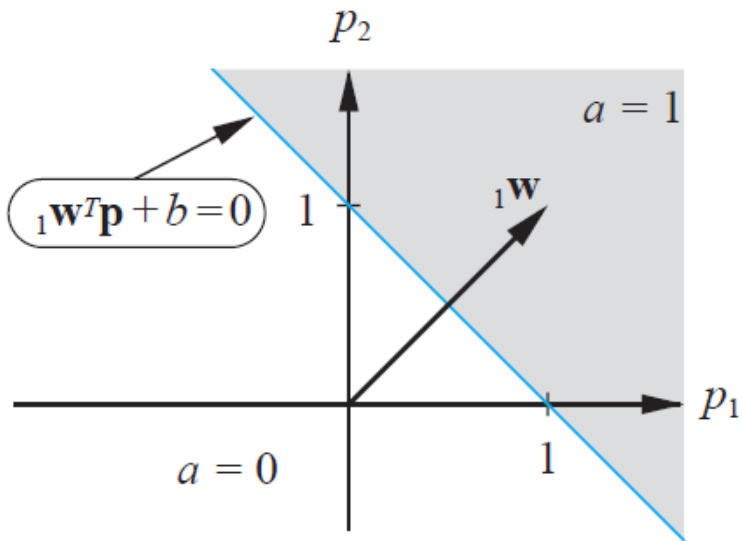


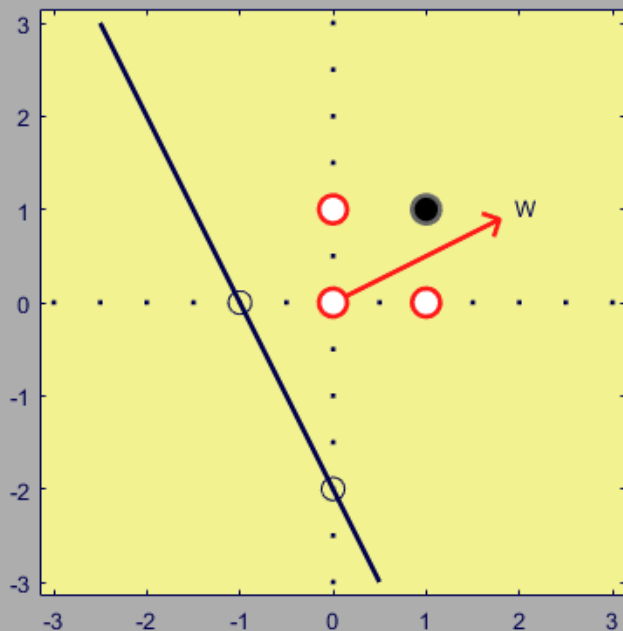
Alter the weight, bias and input by dragging the triangular shaped indicators.

Pick the transfer function with the F menu.

Watch the change to the neuron function and its output.

[Contents](#)[Close](#)



*Neural Network DESIGN***Decision Boundaries**

$$W = \begin{bmatrix} 1.79 & 0.894 \end{bmatrix} \quad b = \begin{bmatrix} 1.79 \end{bmatrix}$$

Move the perceptron decision boundary by dragging its handles.

Try to divide the circles so that none of their edges are red.

The weights and bias will take on values associated with the chosen boundary.

Drag the white and black dots to define different problems.

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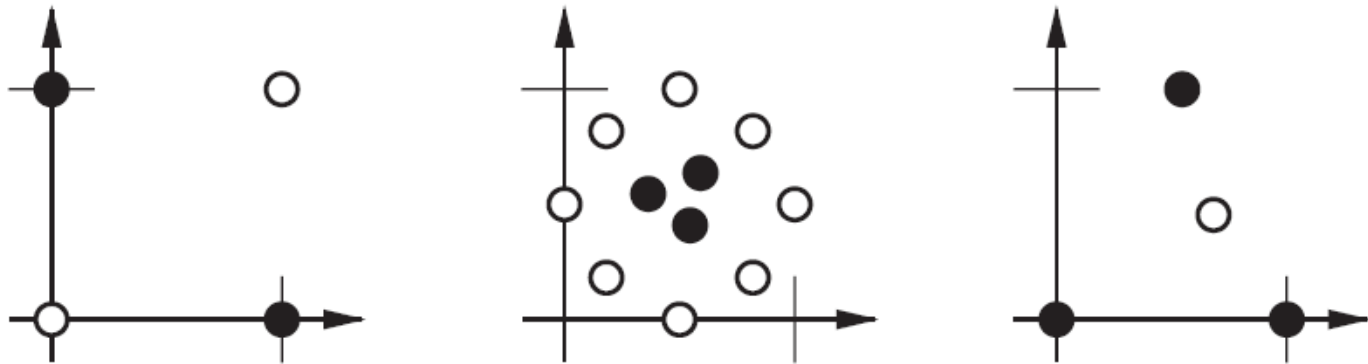


Figure 4.6 Linearly Inseparable Problems

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Define Shallow Neural Network Architectures

Classification with a 2-Input Perceptron

A 2-input hard limit neuron is trained to classify 5 input vectors into two categories.

Open Live Script

Outlier Input Vectors

A 2-input hard limit neuron is trained to classify 5 input vectors into two categories. However, because 1 input vector is much larger than all

Open Script

Normalized Perceptron Rule

A 2-input hard limit neuron is trained to classify 5 input vectors into two categories. Despite the fact that one input vector is much bigger than the

Open Script

Linearly Non-separable Vectors

A 2-input hard limit neuron fails to properly classify 5 input vectors because they are linearly non-separable.

Open Script

Radial Basis Approximation

Uses the NEWRB function to create a radial basis network that approximates a function defined by a set of data points.

Open Live Script

Radial Basis Underlapping Neurons

A radial basis network is trained to respond to specific inputs with target outputs. However, because the spread of the radial basis neurons is

Open Live Script

file:///C:/Program%20Files/MATLAB/R2019b/help/deeplearning/examples.html?s_tid=CRUX_lftnav_example_index&category=deep-learning-with-time-series-sequences-and-text

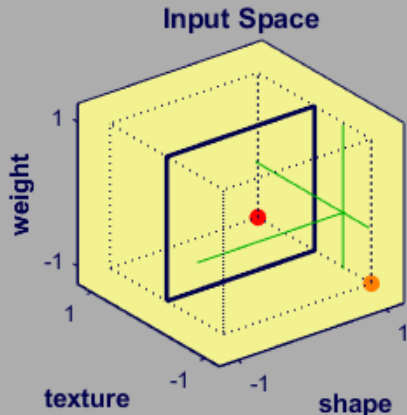
Perceptron Classification



The calculations for the perceptron will appear to the left.

Close

Chapter 3



Fruit = Orange

