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Problem 4.1

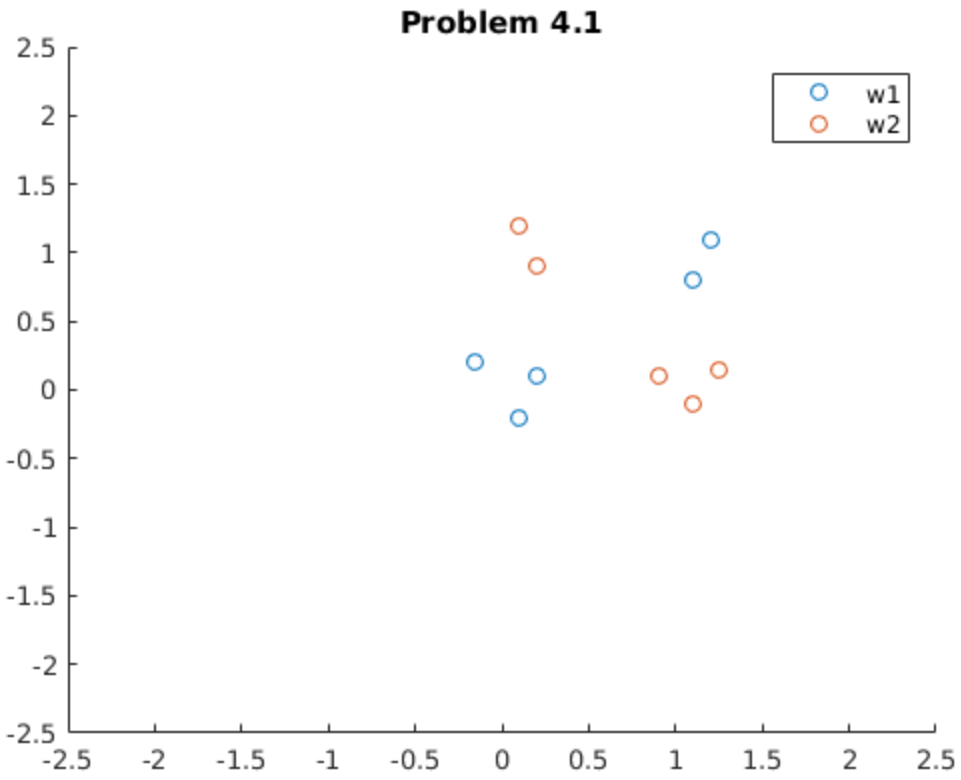
```
clear all
clc

w_1 = [.1 -.2;
    .2 .1;
    -.15 .2;
    1.1 0.8;
    1.2 1.1];

w_2 = [1.1 -.1;
    1.25 .15;
    .9 .1;
    .1 1.2;
    .2 .9];


scatter(w_1(:,1), w_1(:, 2))
hold on
xlim([-2.5 2.5])
ylim([-2.5 2.5])
title('Problem 4.1')
scatter(w_2(:,1), w_2(:, 2))
legend('w1', 'w2')

% It is clear that the data set is not linearly separable
% by one line, but it can be separated by two. This is where
% a multilayer perceptron will be useful.
```



Deep Learning

```
% a)

% A convolutional neural net is strictly feed forward where the
 combination of
% multiple functions at neuron yield a new function (f + a = g), hence
 the included term "convolution".
% A neural net is generic term for a set of machine learning
 algorithms that utilize "neurons".

% b)

% A feed forward neural net only has data flowing in one direction,
 usually towards the output neuron.
% From a graph perspective, there are no cycles in the graph for
 forward propagation.
% A neural net with back propagation is implemented similarly to a
 feed forward, except error
% is calculated at each layer and fed back to previous layers to
 retrain the network.
```

Clustering by compression

```
% a)
```

```
% I'm very sleepy
```

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