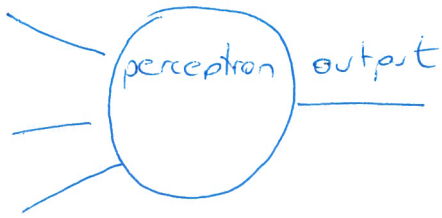
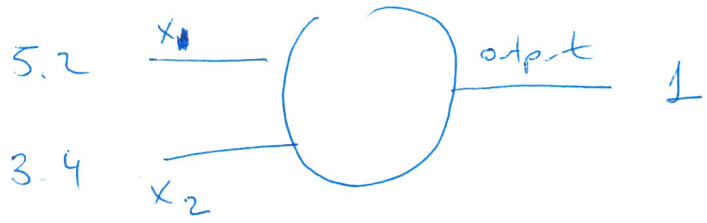
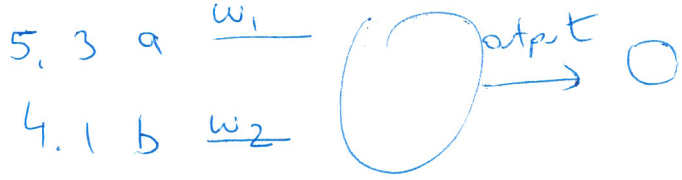
CS4811



1 in
0 out

a "classifier"





$a w_1 + b w_2$ = sum

weighted sum of the inputs

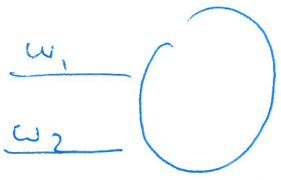
$$\text{output} = \begin{cases} 1 & \text{if sum} \geq \text{threshold} \\ 0 & \text{otherwise} \\ & \text{sum} < \text{threshold} \end{cases}$$

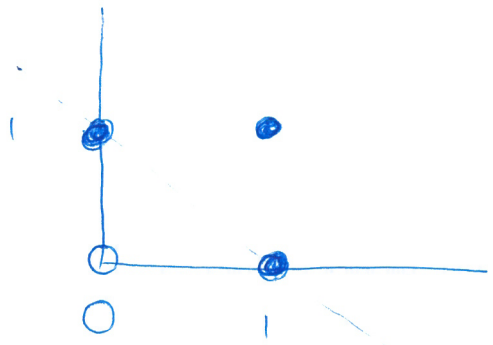
training

```
while initialize weights randomly
until every example is classified correctly do
        run an example thru the perceptron
        if the output is incorrect
                adjust the weights
        otherwise
                do it (it ain't broke)
                change anything
end until
```

5.2	3.4	1
5.3	4.1	0
⋮		

} training examples





OR

x_1	x_2	y
0	0	0
0	1	1
1	0	1
1	1	1

y – desired outcome

$$w_i \leftarrow w_i + \alpha \underbrace{(y - h_{\vec{w}}(\vec{x}))}_{\text{error}} * \underbrace{x_i}_{\text{output}}$$

$$a w_1 + b w_2 \geq \text{threshold}$$

$$a w_1 + b w_2 - \text{threshold} \geq 0$$

$$a w_1 + b w_2 + 1 \times w_0 \geq 0$$