A "classifier"

\[ \text{output} = \begin{cases} 
1 & \text{if } \sum w_i \geq \text{threshold} \\
0 & \text{otherwise} 
\end{cases} \]

Training:
- Initialize weights randomly
- Until every example is classified correctly do:
  - Run an example through the perceptron
  - If the output is incorrect adjust the weights
  - Otherwise don't change anything (it ain't broke)
- End until
\[ w_i \rightarrow \text{updated error} \]

```
5.2 3.4 1
5.3 4.1 0
```

Training examples

\[
w_i \leftarrow w_i + \alpha (y - h_w(x)) \times x_i
\]

\text{output}
\[ aw_1 + bw_2 \geq \text{threshold} \]

\[ aw_1 + bw_2 - \text{threshold} \geq 0 \]

bias
\[ \begin{array}{c}
1 \\
a \\
b
\end{array} \]

aw_1 + bw_2 + 1 \times w_0 \geq 0