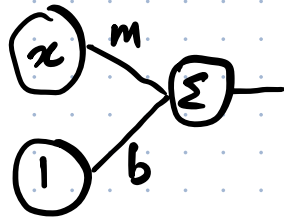


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$x$	$y$
2	0.1
3.1	0.7
4	3
1	10
7	?

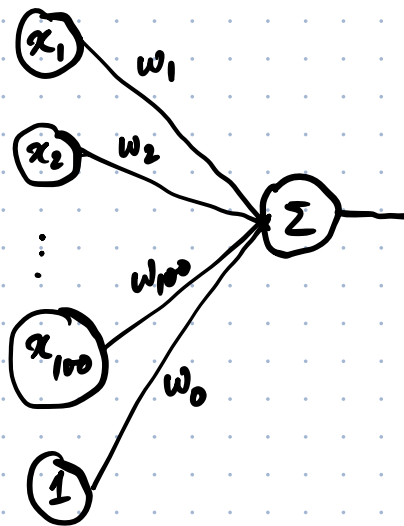
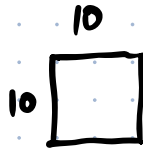
$$y = mx + b$$



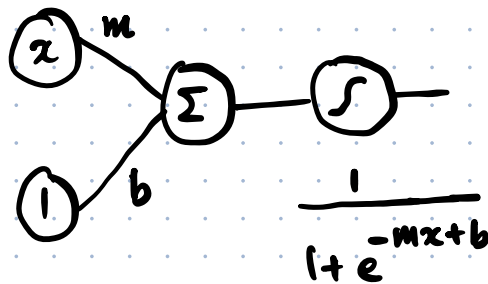
REGRESSION

↑  
Features

$$x \in \mathbb{R}^{100}$$



$x$	$y$
3	0
3.7	0
5	1
6	1
8	?

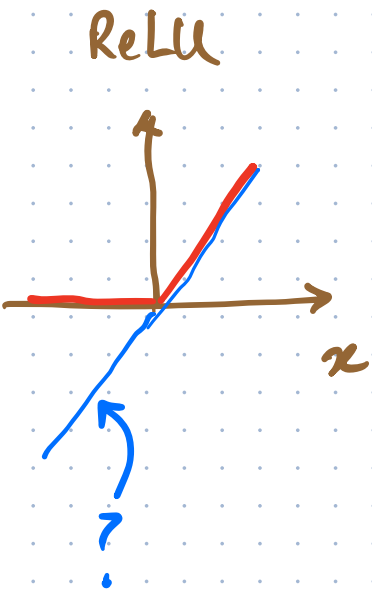
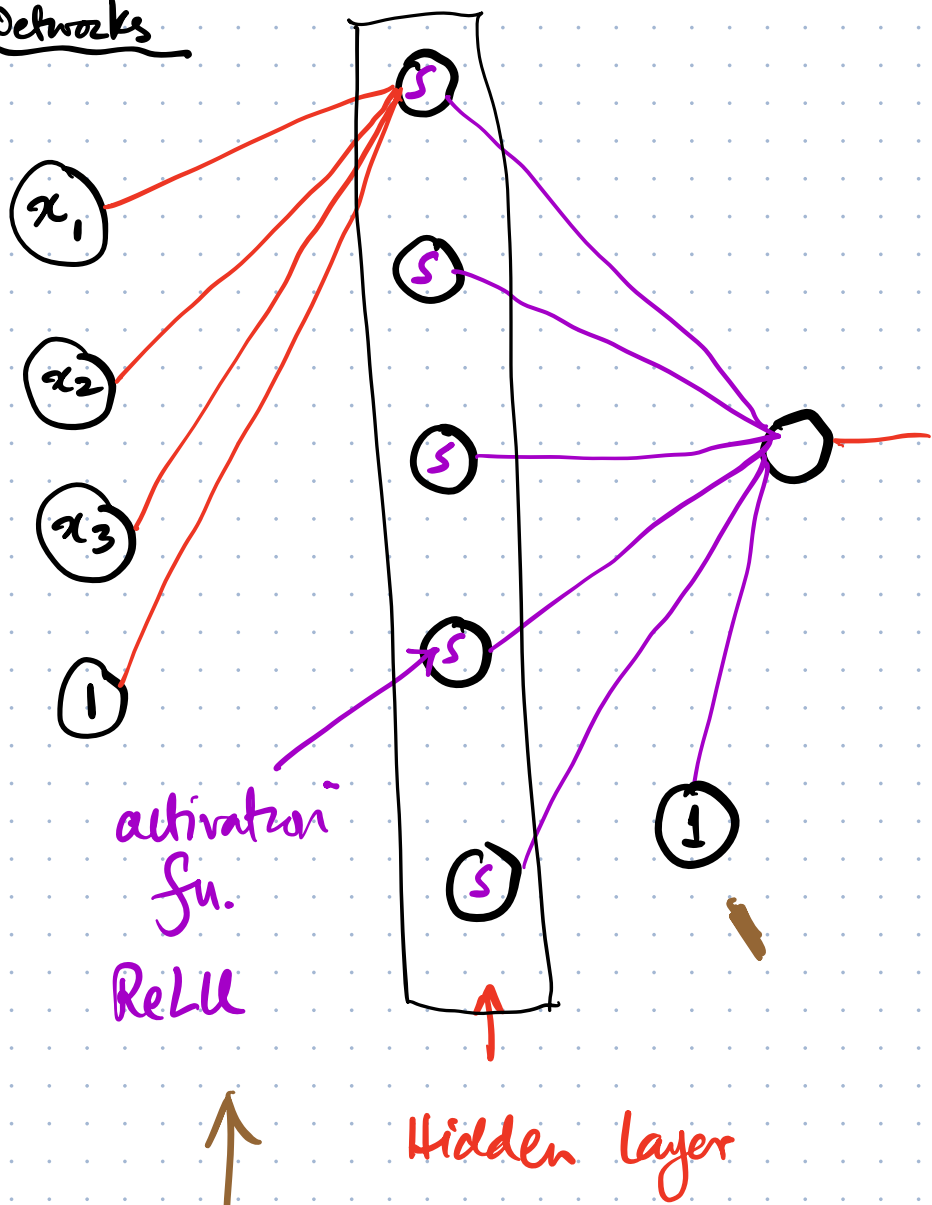


↑ Features      ↑ labels

↑  
Training involves learning the weights of the connections

# Artificial Neural Networks

$x \in \mathbb{R}^3$   
↑  
feature

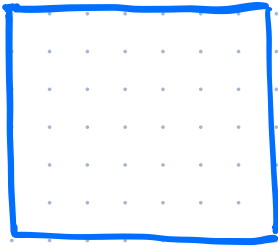


5x4 Matrix

$$\begin{bmatrix} h_1 \\ h_2 \\ h_3 \\ h_4 \\ h_5 \end{bmatrix} = \begin{bmatrix} & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \end{bmatrix}_{5 \times 4} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ 1 \end{bmatrix}$$

$$\begin{bmatrix} 5 \times 4 \end{bmatrix} \rightsquigarrow \begin{bmatrix} 6 \times 1 \end{bmatrix}$$

S12

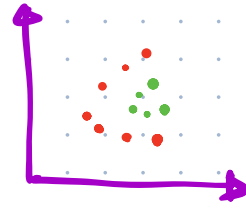


512

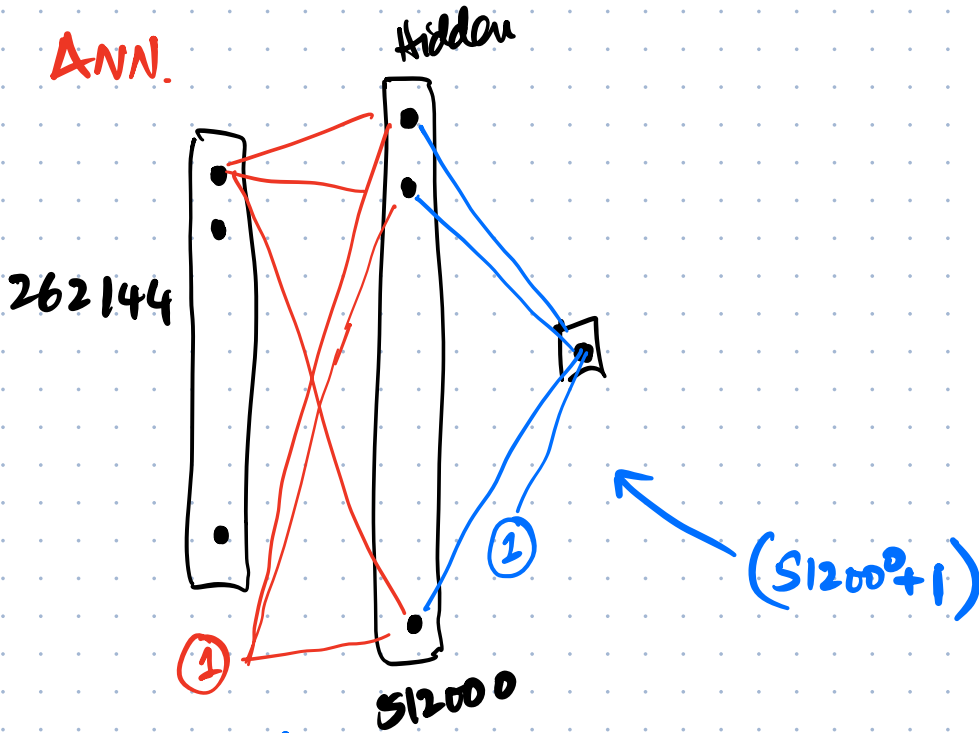
Logistic regression

$$(512)(512) + 1$$

parameters.



ANN.



$$\approx (51200)(262144 + 1)$$

