Perceptron Learning

$start\ at\ \ w_i = 0.5\ ;\ i = 0, 1, 2$

$x = net\ sum$

$f(x) = \begin{cases} 1\ ;\ x \geq 0 \\ 0\ ;\ x < 0 \end{cases}$

$w_{i(new)} = w_{i(old)} + \alpha(t - o)x_i$

Perceptron Learning Example - Function AND

Bias Input X0 = +1							Alpha = 0.5					
Input			Weight			Net Sum	Tarket	Actual	Alpha*	Weight Values		
x0	x1	x2	x0*w0	x1*w1	x2*w2	Input	Output	Output	Error	w0	w1	w2
							t	o	α(t-o)	**0.5**	**0.5**	**0.5**
1	0	0	0.5	0	0	0.5	0	1	-0.5	0	0.5	0.5
1	0	1	0	0	0.5	0.5	0	1	-0.5	-0.5	0.5	0
1	1	0	-0.5	0.5	0	0	0	1	-0.5	-1	0	0
1	1	1	-1	0	0	-1	1	0	0.5	-0.5	0.5	0.5
1	0	0	-0.5	0	0	-0.5	0	0	0	-0.5	0.5	0.5
1	0	1	-0.5	0	0.5	0	0	1	-0.5	-1	0.5	0
1	1	0	-1	0.5	0	-0.5	0	0	0	-1	0.5	0
1	1	1	-1	0.5	0	-0.5	1	0	0.5	-0.5	1	0.5
1	0	0	-0.5	0	0	-0.5	0	0	0	-0.5	1	0.5
1	0	1	-0.5	0	0.5	0	0	1	-0.5	-1	1	0
1	1	0	-1	1	0	0	0	1	-0.5	-1.5	0.5	0
1	1	1	-1.5	0.5	0	-1	1	0	0.5	-1	1	0.5
1	0	0	-1	0	0	-1	0	0	0	-1	1	0.5
1	0	1	-1	0	0.5	-0.5	0	0	0	-1	1	0.5
1	1	0	-1	1	0	0	0	1	-0.5	-1.5	0.5	0.5
1	1	1	-1.5	0.5	0.5	-0.5	1	0	0.5	-1	1	1
1	0	0	-1	0	0	-1	0	0	0	-1	1	1
1	0	1	-1	0	1	0	0	1	-0.5	-1.5	1	0.5
1	1	0	-1.5	1	0	-0.5	0	0	0	-1.5	1	0.5
1	1	1	-1.5	1	0.5	0	1	1	0	-1.5	1	0.5
1	0	0	-1.5	0	0	-1.5	0	0	0	-1.5	1	0.5
1	0	1	-1.5	0	0.5	-1	0	0	0	-1.5	1	0.5
1	1	0	-1.5	1	0	-0.5	0	0	0	-1.5	1	0.5
1	1	1	-1.5	1	0.5	0	1	1	0	-1.5	1	0.5

	Actual Positive	Actual Negative
Tarket Positive	**TP**	**FP**
Tarket Negative	**FN**	**TN**

	Actual Positive	Actual Negative	sum
Tarket Positive	1	0	1
Tarket Negative	0	3	3
sum	1	3	4

Accuracy	(TP + TN) / All
Accuracy =	1
	100%

Recall	TP / (TP + FN)
Recall =	1
	100%

Precision	TP / (TP + FP)
Precision =	1
	100%

F Score	F1 = 2PR / P + R
F1 =	1
	100%