```
x = {{0, 0}, {0, 1}, {1, 0}, {1, 1}};
t = {{0}, {1}, {1}, {1}};
x = Map[Append[#, -1] &, x]
w = RandomReal[{-.1, .1}, {Length[First[x]], 1}]

{{0, 0, -1}, {0, 1, -1}, {1, 0, -1}, {1, 1, -1}}

{{0.0880997}, {0.0407375}, {0.0899978}}
```

In[734]:=
```
x = {{0, 0}, {0, 1}, {1, 0}, {1, 1}};
t = {{0, 1}, {1, 1}, {1, 1}, {1, 0}};
x = Map[Append[#, -1] &, x]
w = RandomReal[{-.1, .1}, {Length[First[x]], Length[First[t]]}]
```

Out[736]= {{0, 0, -1}, {0, 1, -1}, {1, 0, -1}, {1, 1, -1}}

Out[737]= {{-0.0555815, 0.0248692}, {0.0839794, -0.0814378}, {-0.0898078, -0.0779983}}

In[745]:=
```
tf[z_] := If[z > 0, 1, 0]
y = x . w
y = Map[tf[#] &, y, {2}]
MatrixForm[Transpose[x]]
MatrixForm[t - y]
d = Transpose[x].(t - y)
w += .1 * d
```

Out[746]= {{-0.0101922, 0.0779983}, {0.0737872, -0.00343947},
          {-0.0657737, 0.00286746}, {0.0182057, -0.0785703}}

Out[747]= {{0, 1}, {1, 0}, {0, 1}, {1, 0}}

Out[748]//MatrixForm=
$$\begin{pmatrix} 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 \\ -1 & -1 & -1 & -1 \end{pmatrix}$$

Out[749]//MatrixForm=
$$\begin{pmatrix} 0 & 0 \\ 0 & 1 \\ 1 & 0 \\ 0 & 0 \end{pmatrix}$$

Out[750]= {{1, 0}, {0, 1}, {-1, -1}}

Out[751]= {{0.0444185, -0.0751308}, {0.0839794, 0.0185622}, {-0.0898078, -0.177998}}
```

```
Plot3D[{0, Map[If[First[#] > 0, 1, 0] &, {{a, b, -1}}.w]}, {a, 0, 1}, {b, 0, 1}]
```