

```
1 using System;
2 using System.Collections.Generic;
3 using System.Linq;
4 using System.Text;
5 using System.Threading.Tasks;
6
7 namespace Neural_Network
8 {
9     class PerzeptronHiddenCell : Neuron
10     {
11         public override void learn(TrainingInstance ti) {
12             setDelta(ti);
13
14             foreach (Synapse s in incomingSynapses){
15                 s.weight += -learningRate * s.voltage * delta;
16             }
17         }
18
19         public override void setDelta(TrainingInstance t) {
20             double sumout = 0.0;
21             foreach (Synapse s in outgoingSynapses) {
22                 s.to.calc();
23                 s.to.setDelta(t);
24                 sumout += s.weight * s.to.delta;
25             }
26             delta = activateDifferentiated(excitation()) * sumout;
27         }
28
29         protected override double activate(double sum)
30         {
31             //fermi function
32             return 1 / (1 + Math.Pow(Math.E, -sum));
33         }
34
35         protected override double activateDifferentiated(double sum)
36         {
37             //differentiated fermi function
38             double a = activate(sum);
39             return a*(1.0-a);
40         }
41     }
42 }
43
```