**Compute adaptive weight for ANN (by hand)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| W­1j | W1i | W2j | W2i | W3j | W3i | Wjk | Wik |
| 0.2 | 0.1 | 0.3 | -0.1 | -0.1 | 0.2 | 0.1 | 0.5 |

**Given the initial weights:**

**Input: [1, 0.4, 0.7]**

**Nodes:**

**(1,2,3) -> (j,i) -> k**

**Calculate the updated weights for the first iteration.**

1

0.4

0.7

**0.2**

**0.1**

**0.3**

**-0.1**

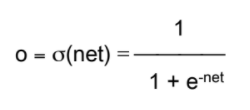
**-0.1**

**0.2**

**0.1**

**0.5**

**Hàm kích hoạt:**



Net­j = 1\*0.2 + 0.4\*0.3 + 0.7\*(-0.1) = 0.25 🡺 Oj = =  = 0.5622.

Neti = 1\*0.1 + 0.4\*(-0.1) + 0.7\*0.2 = 0.2 🡺 Oi =  = 0.5498.

Netk = 0.5622\*0.1 + 0.5498\*0.5 = 0.33112 🡺 Ok = = 0.582.

δk = Ok(1 – Ok )(tk – Ok ) = 0.582(1 – 0.582)(tk – 0.582). = 0.2433(tk – 0.582)

δj = Oj(1 – Oj)∑kwjkδk = 0.5622(1-0.5622)0.1\*δk = 0.0246\* δk

δi = Oi(1 – Oi)∑kwikδk = 0.5498(1-0.5498)0.5\*δk = 0.1237\* δk

**Chọn η = 1 và α = 0**

**Công thức:** **Δwij(n) = ηδjxij + αΔwij(n - 1)**

Δwjk = η\*δk\*Oj = 1\*δk\*0.5622 = 0.5622\*δk 🡺  = 0.1 + 0.5622\*δk.

Δwik = η\*δk\*Oi = 1\*δk\*0.5498 = 0.5498\*δk 🡺  = 0.5 + 0.5498\*δk.

Δw1j = η\*δj\*x1 = 1\*δj\*1 🡺 = 0.2 + δj.

Δw2j = η\*δj\*x2 = 1\*δj\*0.4 🡺 = 0.3 + 0.4\*δj.

Δw3j = η\*δj\*x3 = 1\*δj\*0.7 🡺 = -0.1 + 0.7\*δj.

Δw1i = η\*δi\*x1 = 1\*δi\*1 🡺 = 0.1 + δi.

Δw2i = η\*δi\*x2 = 1\*δi\*0.4 🡺 = -0.1 + 0.4\*δi.

Δw3i = η\*δi\*x3 = 1\*δi\*0.7 🡺 = 0.2 + 0.7\*δi.