$$z_{h_1} = w_1 \cdot i_1 + w_2 \cdot i_2 + b_1 \cdot 1$$

$$= 0.15 \times 0.05 + 0.2 \times 0.1 + 0.35$$
$$= 0.3775$$

$$a_{h_1} = \frac{1}{1+e^{-z_{h_1}}} = \frac{1}{1+e^{-0.3775}} = 0.593269992$$

$$a_{h_2} = 0.596884378$$

$$z_{o_1} = w_5 \cdot a_{h_1} + w_6 \cdot a_{h_2} + b_2 \cdot 1$$

$$= 0.4 \times 0.593269992 + 0.45 \times 0.596884378 + 0.6 = 1.105905967$$

$$a_{o_1} = \frac{1}{1+e^{-z_{o_1}}} = 0.751365069$$

$$a_{o_2} = 0.772928465$$

$$E_T = \sum \frac{1}{n} (Y_i - O_i)^2$$

$$= \sum E_i$$
$$= E_1 + E_2 = \frac{1}{2}(0.01 - 0.751365069)^2 + \frac{1}{2}(0.99 - 0.772928465)^2$$
$$= 0.298371109$$

$$\frac{\partial E_T}{\partial w_5} = \frac{\partial z_{o_1}}{\partial w_5} \cdot \frac{\partial a_{o_1}}{\partial z_{o_1}} \cdot \frac{\partial E_1}{\partial a_{o_1}} \cdot \frac{\partial E_T}{\partial E_1}$$

$$E_T = E_1 + E_2 \qquad \frac{\partial E_T}{\partial E_1} = 1$$

$E_1 = \frac{1}{2}(Y_1 - a_{o_1})^2 \quad \frac{\partial E_1}{\partial a_{o_1}} = 2 \times \frac{1}{2}(Y_1 - a_{o_1}) \cdot (-1) = 0.741365069$

$a_{o_1} = \frac{1}{1+e^{-z_{o_1}}} \quad \frac{\partial a_{o_1}}{\partial z_{o_1}} = a_{o_1} \cdot (1 - a_{o_1}) = 0.186815602$

$z_{o_1} = w_5 \cdot a_{h_1} + w_6 \cdot a_{h_2} + b_2 \quad \frac{\partial z_{o_1}}{\partial w_5} = a_{h_1} = 0.593269992$

$\frac{\partial E_T}{\partial w_5} = -(Y_1 - a_{o_1}) \cdot a_{o_1} \cdot (1 - a_{o_1}) \cdot a_{h_1} = 0.082167041$

$w_5^+ = w_5 - \eta \frac{\partial E_T}{\partial w_5} = 0.35891648$

$\frac{\partial E_T}{\partial w_1} = \frac{\partial E_T}{\partial a_{h_1}} \cdot \frac{\partial a_{h_1}}{\partial z_{h_1}} \cdot \frac{\partial z_{h_1}}{\partial w_1}$

$= \left(\frac{\partial E_{o_1}}{\partial a_{h_1}} + \frac{\partial E_{o_2}}{\partial a_{h_1}}\right) \cdot \frac{\partial a_{h_1}}{\partial z_{h_1}} \cdot \frac{\partial z_{h_1}}{\partial w_1}$

$\frac{\partial E_{o_1}}{\partial a_{h_1}} = \frac{\partial E_{o_1}}{\partial a_{o_1}} \cdot \frac{\partial a_{o_1}}{\partial z_{o_1}} \cdot \frac{\partial z_{o_1}}{\partial a_{h_1}} = 0.055399425$

$\frac{\partial E_{o_2}}{\partial a_{h_1}} = \frac{\partial E_{o_2}}{\partial a_{o_2}} \cdot \frac{\partial a_{o_2}}{\partial z_{o_2}} \cdot \frac{\partial z_{o_2}}{\partial a_{h_1}} = -0.217071535 \times 0.087350226 \times 0.45$

$= -0.019049119$

$$\frac{\partial a_{h_1}}{\partial z_{h_1}} = a_{h_1} \cdot (1 - a_{h_1}) = 0.59326992 \times (1 - 0.59326992) = 0.24130038$$

$$\frac{\partial z_{h_1}}{\partial w_1} = i_1 = 0.05 \qquad \frac{\partial E_T}{\partial w_1} = (0.0553599425 - 0.01904911) \times 0.24130038 \times 0.05$$

$$= 0.00043858$$

$$w_1^+ = w - \eta \cdot \frac{\partial E_T}{\partial w_1} = 0.14978071$$