

$$\begin{bmatrix} \mathbf{w}_1^T \\ \mathbf{w}_2^T \\ \mathbf{w}_3^T \\ \mathbf{w}_4^T \end{bmatrix} [\mathbf{x}_1 \mathbf{x}_2 \mathbf{x}_3] =$$

$$\mathbf{y} = [1, 3, 2]$$

$\mathbf{Z} = \mathbf{W}^T \mathbf{X}$        $\max(0, 1 - z_{y_n}^n + z_j^n)$

2	0.1	-0.2
1.5	1.5	2.5
-0.2	2.5	3.0
1.7	1.8	1.0

→

0	0	0
0.5	0	0
0	0	1.5
0.7	0.3	0

→

-2	0	0
1	0	-1
0	-1	1
1	1	0

$$\rightarrow \frac{\partial \mathcal{L}_{\text{data}}}{\partial \mathbf{w}_1} = -2\mathbf{x}_1$$

$$\rightarrow \frac{\partial \mathcal{L}_{\text{data}}}{\partial \mathbf{w}_2} = \mathbf{x}_1 - \mathbf{x}_3$$

$$\rightarrow \frac{\partial \mathcal{L}_{\text{data}}}{\partial \mathbf{w}_3} = -\mathbf{x}_2 + \mathbf{x}_3$$

$$\rightarrow \frac{\partial \mathcal{L}_{\text{data}}}{\partial \mathbf{w}_4} = \mathbf{x}_1 + \mathbf{x}_2$$

$$\mathcal{L}_{\text{data}} = 0.5 + 0.7 + 0.3 + 1.5 = 3.0$$