

Multi-class Classification

We use softmax instead of sigmoid. e.g.,

class 1 \rightarrow score = 2

class 2 \rightarrow score = 1

class 3 \rightarrow score = 0

$$2 / (2 + 1 + 0)$$

$$1 / (2 + 1 + 0)$$

$$0 / (2 + 1 + 0)$$

but it doesn't work
for negative scores.



to solve the issue, we
make all the score positive.

instead of $2/(2+1+0)$ we have $e^2/(e^2+e^1+e^0)$.

Softmax function

it converts score to probability.

$$\text{probability (class } i) = \frac{e^{z_i}}{\sum_n e^{z_j}}$$

$z_1 \dots z_N$ are scores.

One-hot encoding:

if 3 classes \rightarrow

c_0	c_1	c_2
0	0	1

 when label is c_2 .