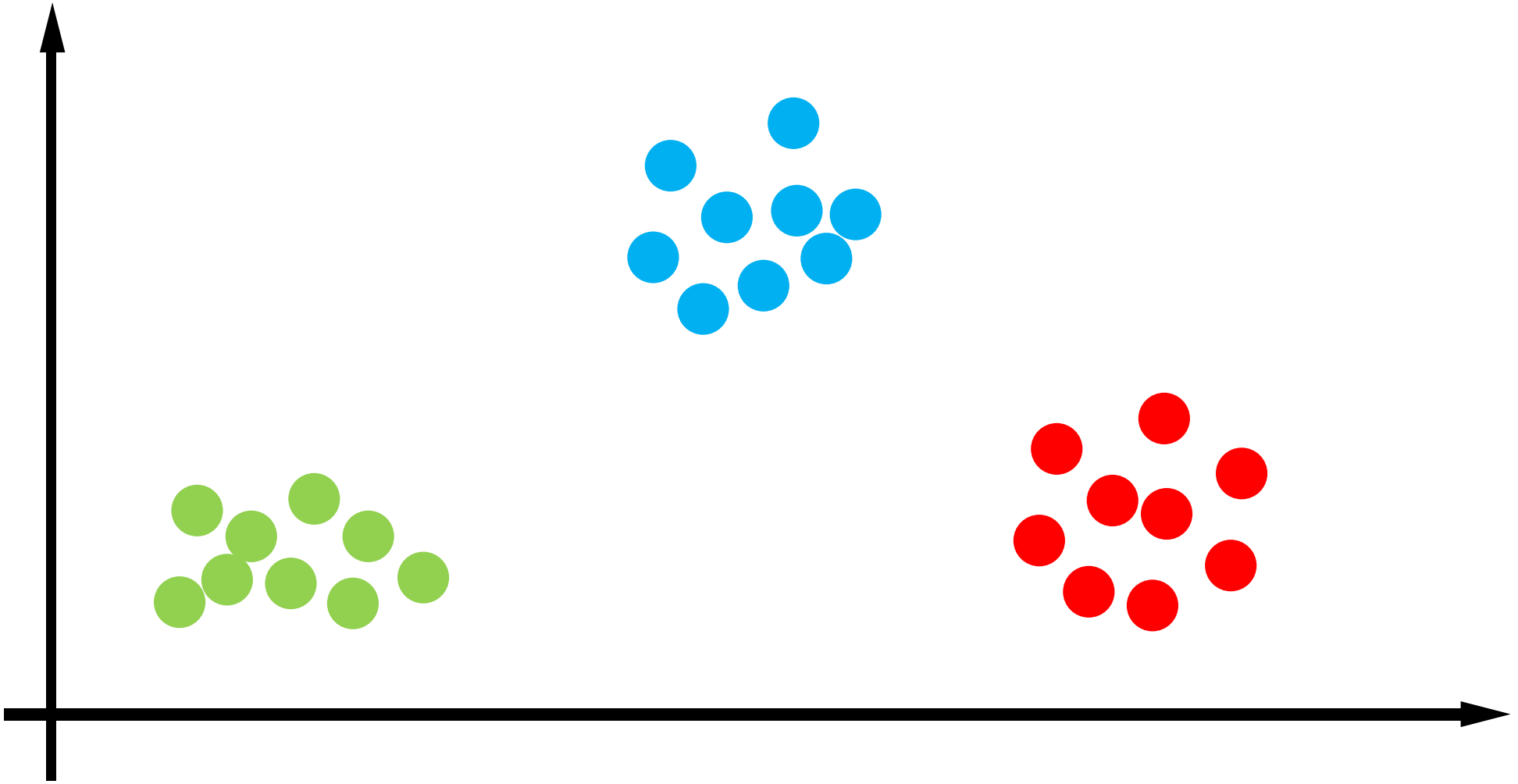
NeuralNet 101

4. Softmax

We have a problem..



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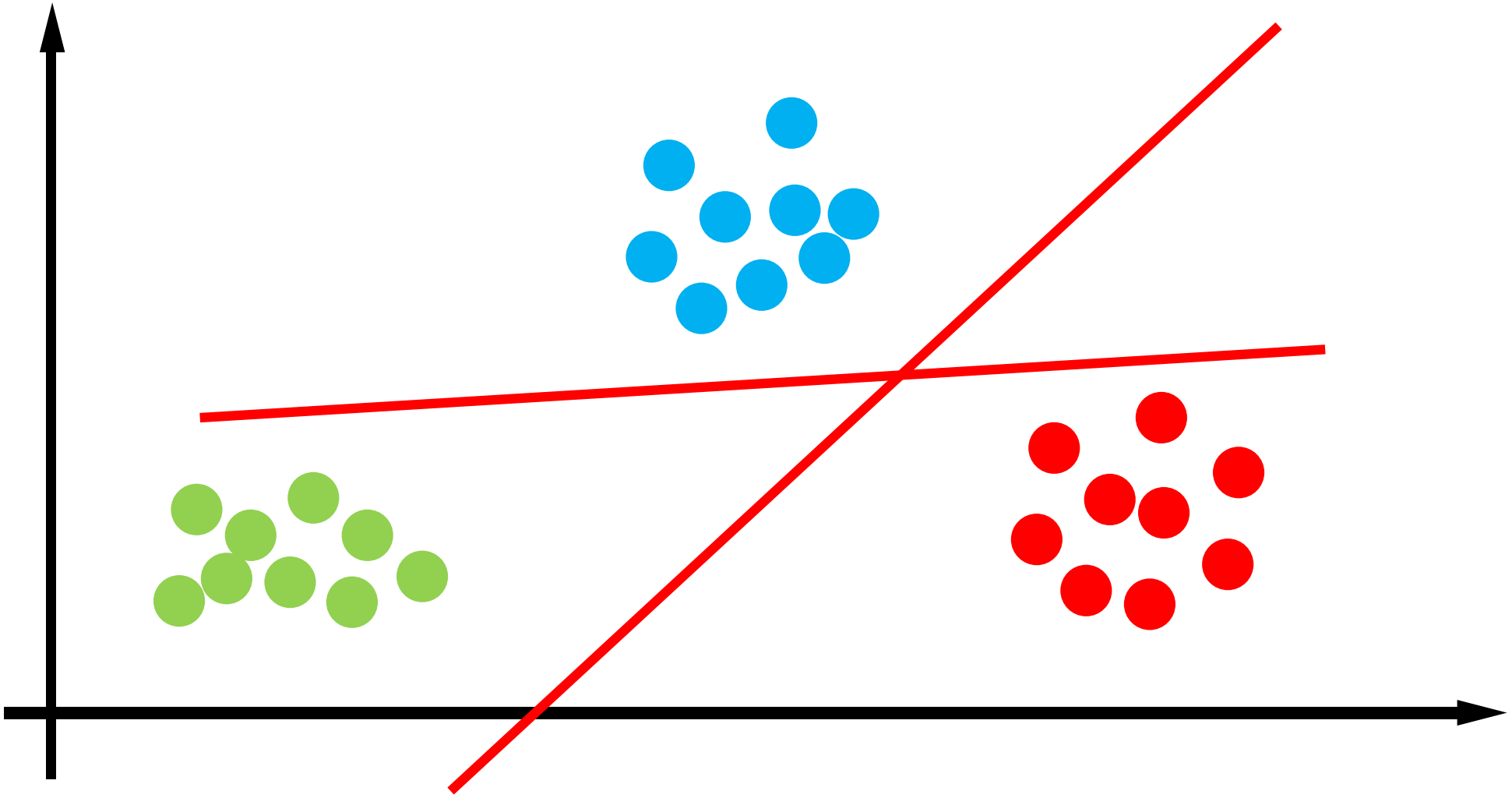

What is Softmax?

multi-class classification using probability

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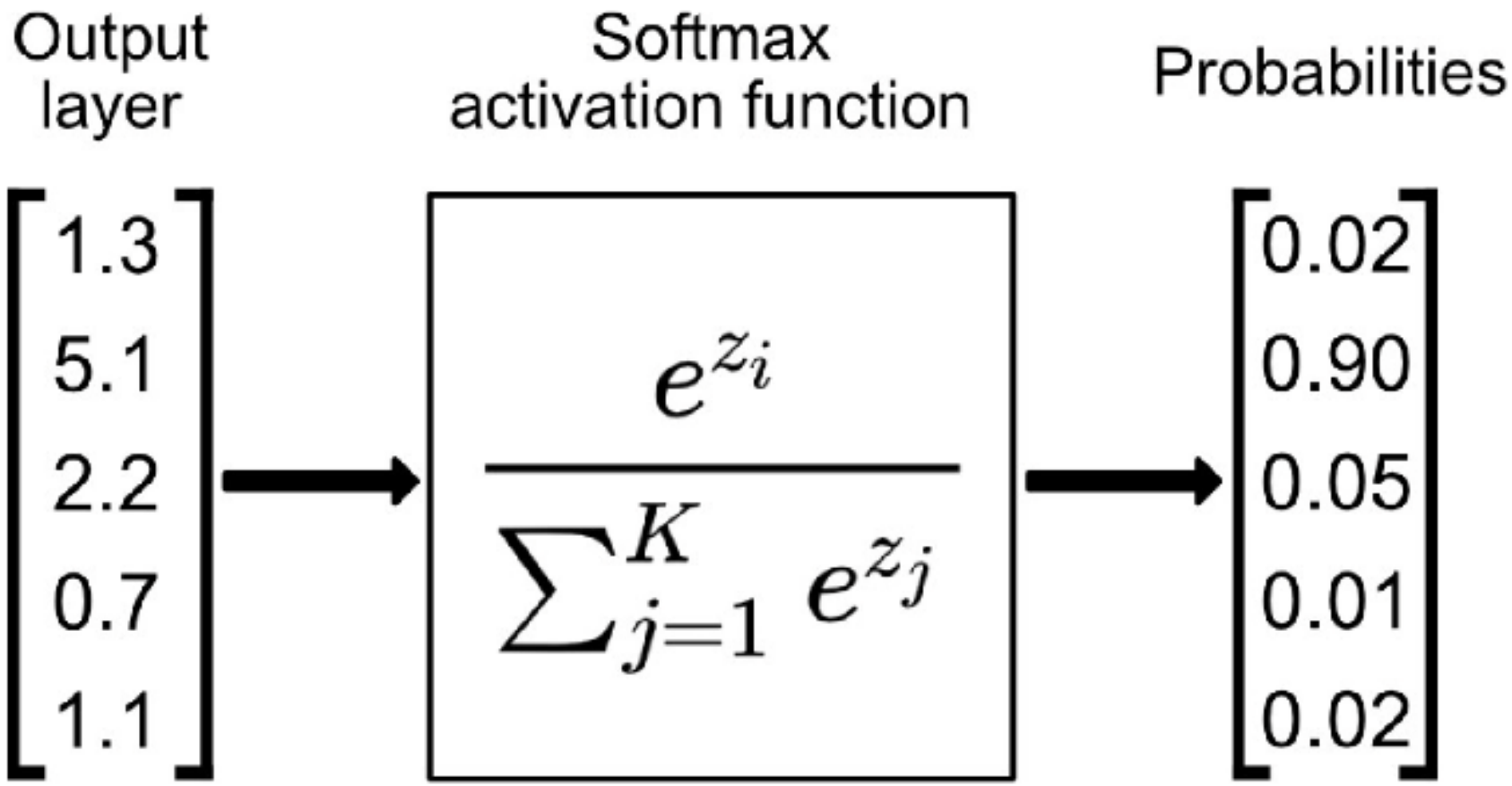
Cross Entropy Loss

Softmax Function

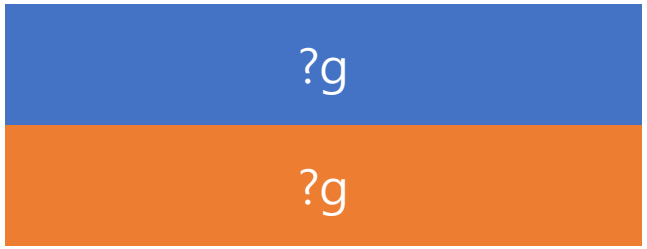


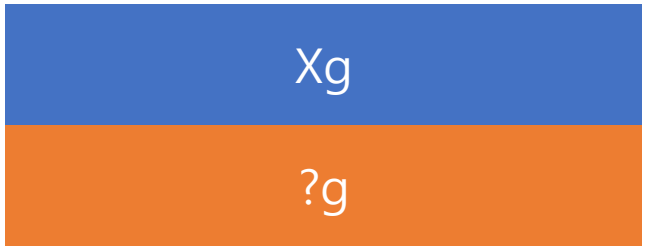
One-Hot Vector

People = {Height, Weight, Foot size}

$$\begin{bmatrix}1\\0\\0\end{bmatrix} \quad \begin{bmatrix}0\\1\\0\end{bmatrix} \quad \begin{bmatrix}0\\0\\1\end{bmatrix}$$

Error Function – Cross Entropy





Error Function – Cross Entropy

$$H(p,q) = -\sum_{i=1}^{N} q(y_i)\log(p(y_i))$$

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Real Data softmax Result

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Probabilities

$$\begin{bmatrix}1\\0\\0\\0\\0\end{bmatrix} \rightarrow \begin{bmatrix}0.02\\0.90\\0.05\\0.01\\0.02\end{bmatrix}$$

Gradient Descent (Last Lecture)

$$x_{n+1} = x_n - \alpha f'(x_n)$$

Use Pytorch!!

Softmax

https://youtu.be/E5AuqaKFlL4

Lab Session

vlab-kaist/NN101_23S/lab/week4