

Basic 3주차 발표

김찬원

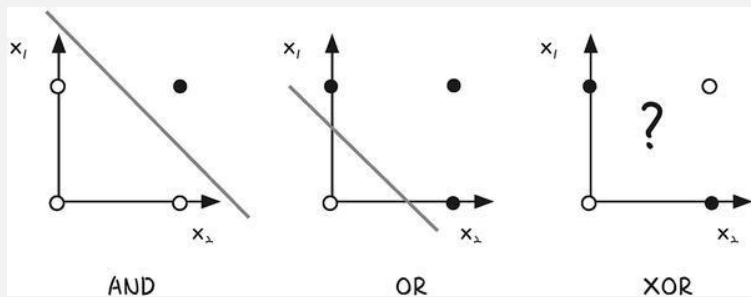
```
lookup.KeyValue  
f.constant(['em  
=tf.constant([0  
ce = tf.lookup.StaticV  
init,  
num_oov_buckets=5)  
  
lookup.StaticVocabular  
initializer,  
num_oov_buckets,  
lookup_key_dtype=None  
name=None,  
experimental_vocabulary
```

Category

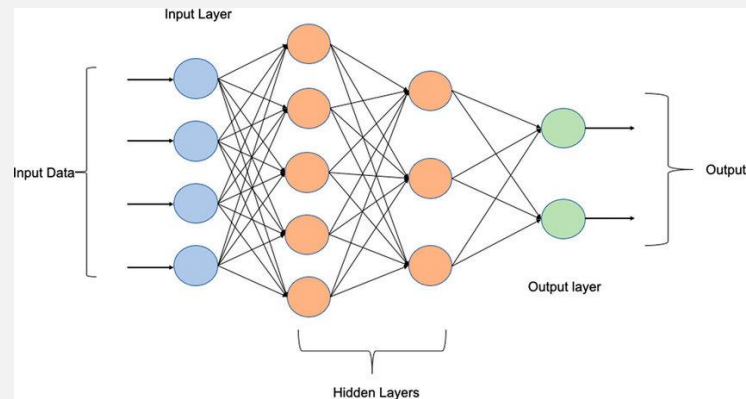
1. 딥러닝이란?
2. XOR 문제
3. ReLU 함수
4. Weight Initialization
5. Dropout & Batch Normalization
6. 추가적인 내용

딥러닝이란?

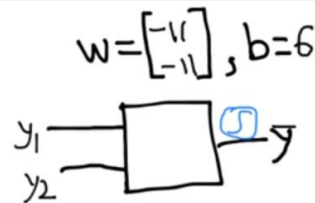
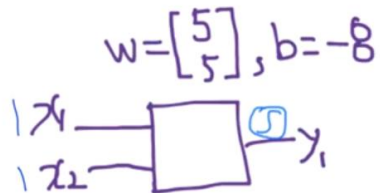
XOR 문제



Multilayer Perceptron



XOR 문제



$$\begin{bmatrix} 1 & 1 \end{bmatrix} \begin{bmatrix} 5 \\ 5 \end{bmatrix} - 8 = \underline{5+5-8} = \underline{2}, \text{sigmoid}(2) = \underline{1}$$

$$\begin{bmatrix} 1 & 1 \end{bmatrix} \begin{bmatrix} -7 \\ -7 \end{bmatrix} + 3 = -7 + -7 + 3 = \underline{-11}, \text{sigmoid}(-11) = 0$$

$$\begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} -11 \\ -11 \end{bmatrix} + 6 = -11 + 0 + 6 = \underline{-5}$$

$$\text{sigmoid}(-5) = 0$$

x_1	x_2	y_1	y_2	\bar{y}	XOR
0	0	0	1	0	0
0	1	0	0	1	1
1	0	0	0	1	1
1	1	1	0	0	0

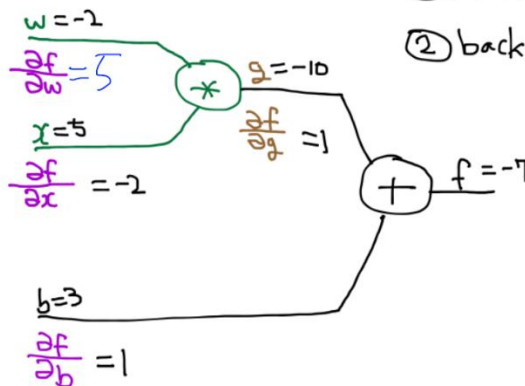
XOR 문제

$$K(x) = \text{sigmoid}(XW_1 + B_1)$$

$$\bar{Y} = H(x) = \text{sigmoid } K(x)W_2 + B_2$$

$$\frac{\partial f}{\partial x} = \frac{\partial f}{\partial g} \frac{\partial g}{\partial x} = 1 * w = -2$$

$$\frac{\partial f}{\partial w} = \frac{\partial f}{\partial g} \frac{\partial g}{\partial x} = 1 * x = 5$$



$$f = wx + b, g = wx, f = g + b$$

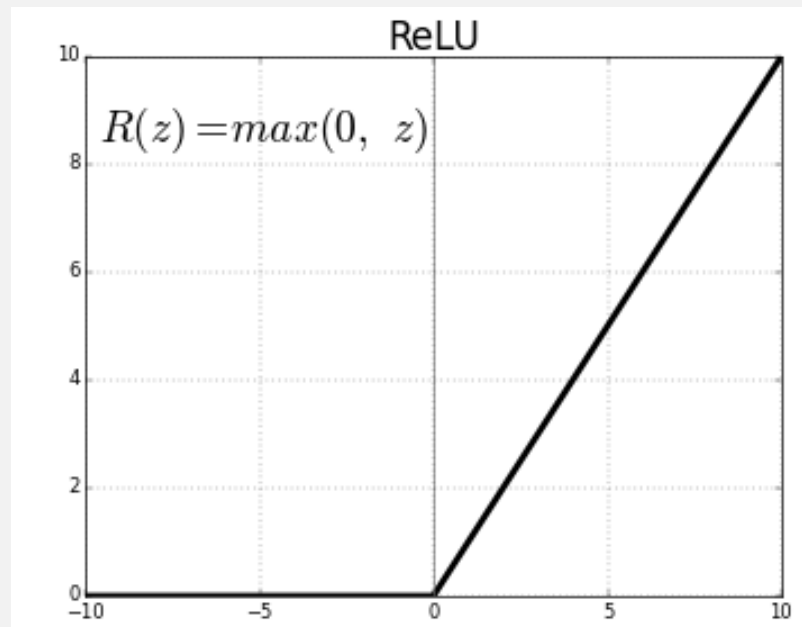
$$\frac{\partial g}{\partial w} = x, \frac{\partial g}{\partial x} = w$$

$$\frac{\partial f}{\partial g} = 1, \frac{\partial f}{\partial b} = 1$$

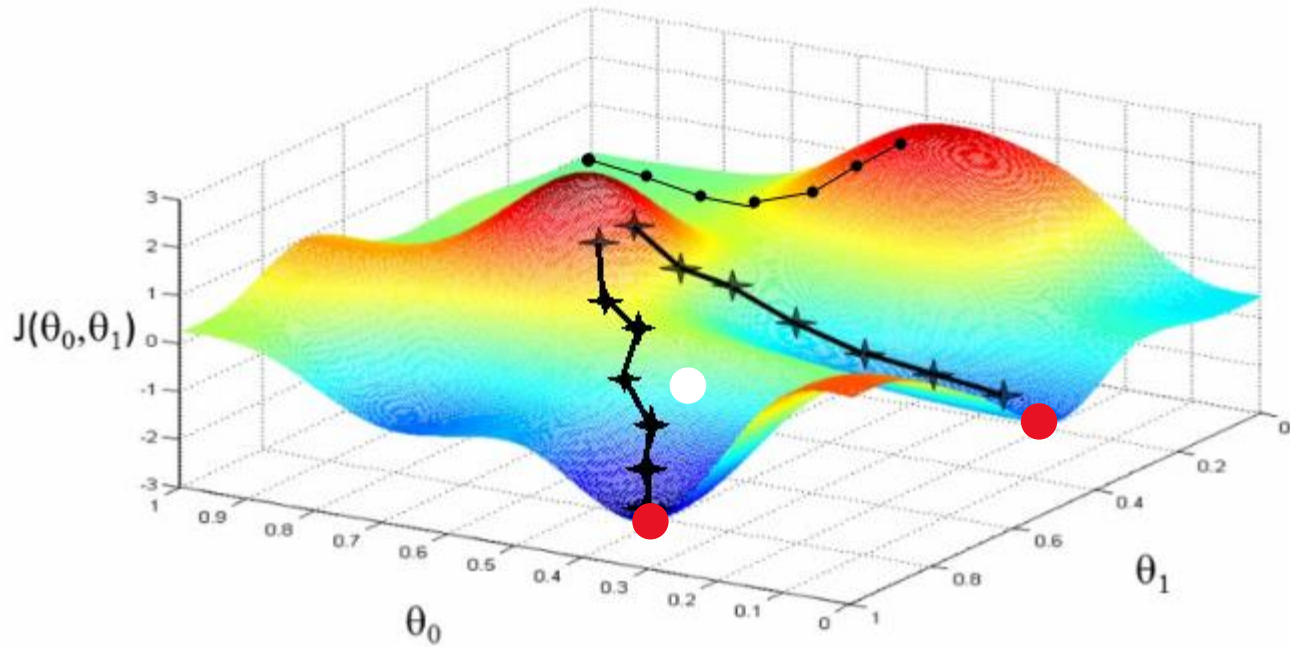
① forward ($w = -2, x = 5, b = 3$)

② backward

ReLU 함수

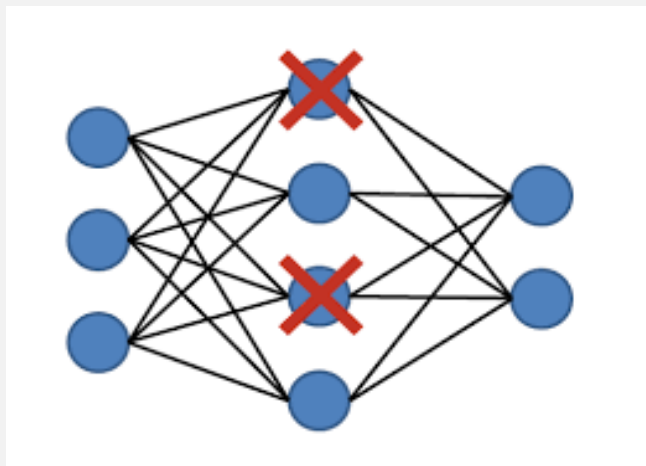


Weight Initialization

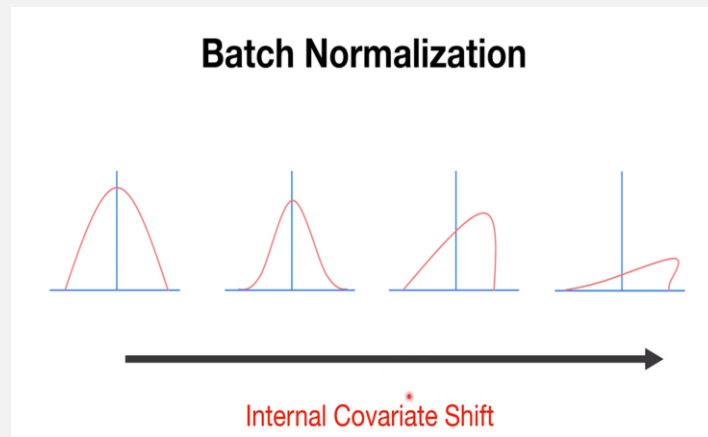


Dropout & Batch Normalization

Dropout



Batch Normalization



추가적인 내용

tf.concat 함수

```
tf.concat(  
    values, axis, name='concat'  
)
```

```
t1 = [[1, 2, 3], [4, 5, 6]]  
t2 = [[7, 8, 9], [10, 11, 12]]
```

t1

1	2	3
4	5	6

t2

7	8	9
10	11	12

tf.concat([t1, t2], 1)

1	2	3	7	8	9
4	5	6	10	11	12

tf.concat([t1, t2], 0)

1	2	3
4	5	6
7	8	9
10	11	12