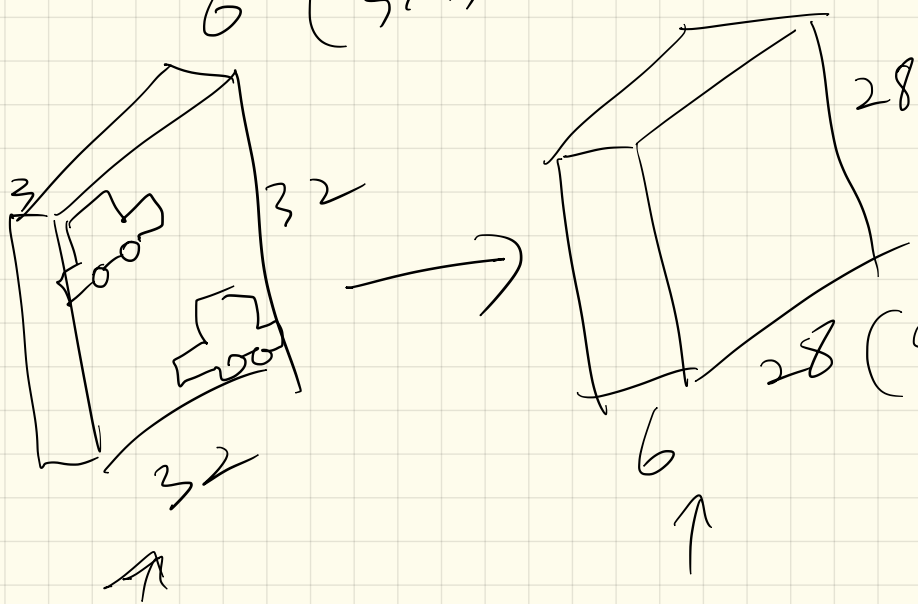


: 5×5×3×6 (×)

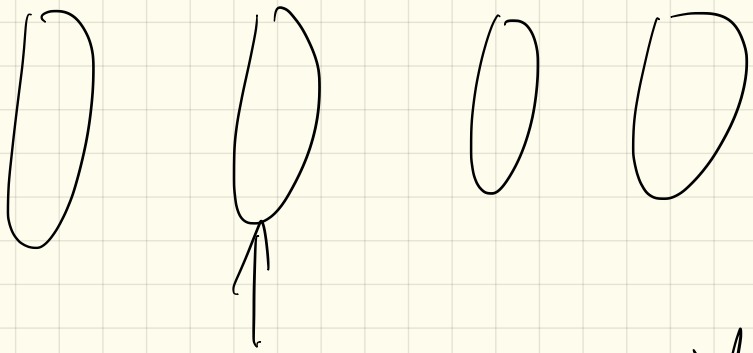
↑ #parameters

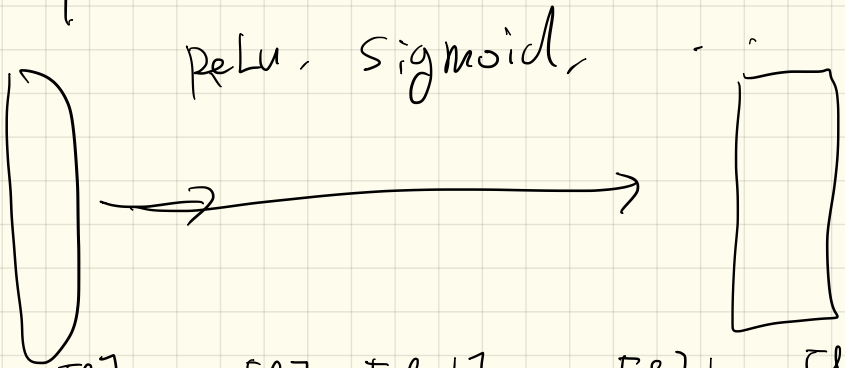
↑ CN

28 (5×5×3+1)×6

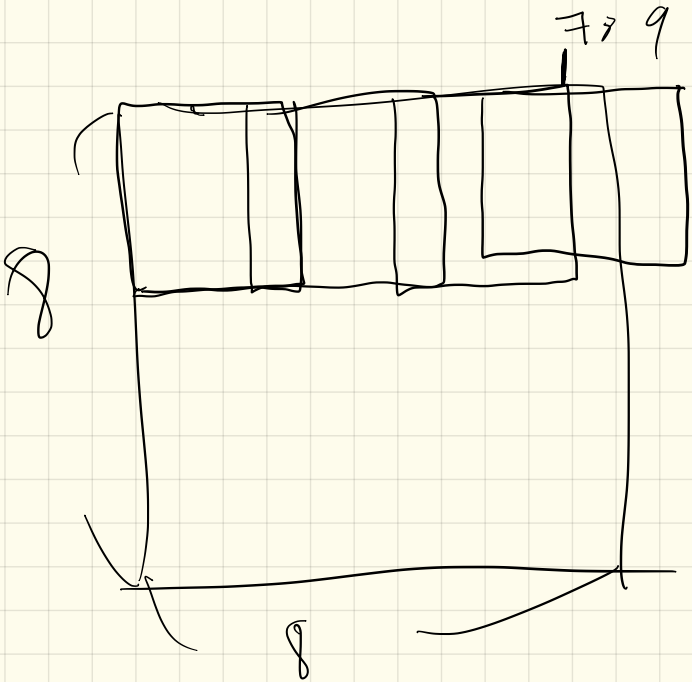
FC : (32×32×3) × (28×28×6)

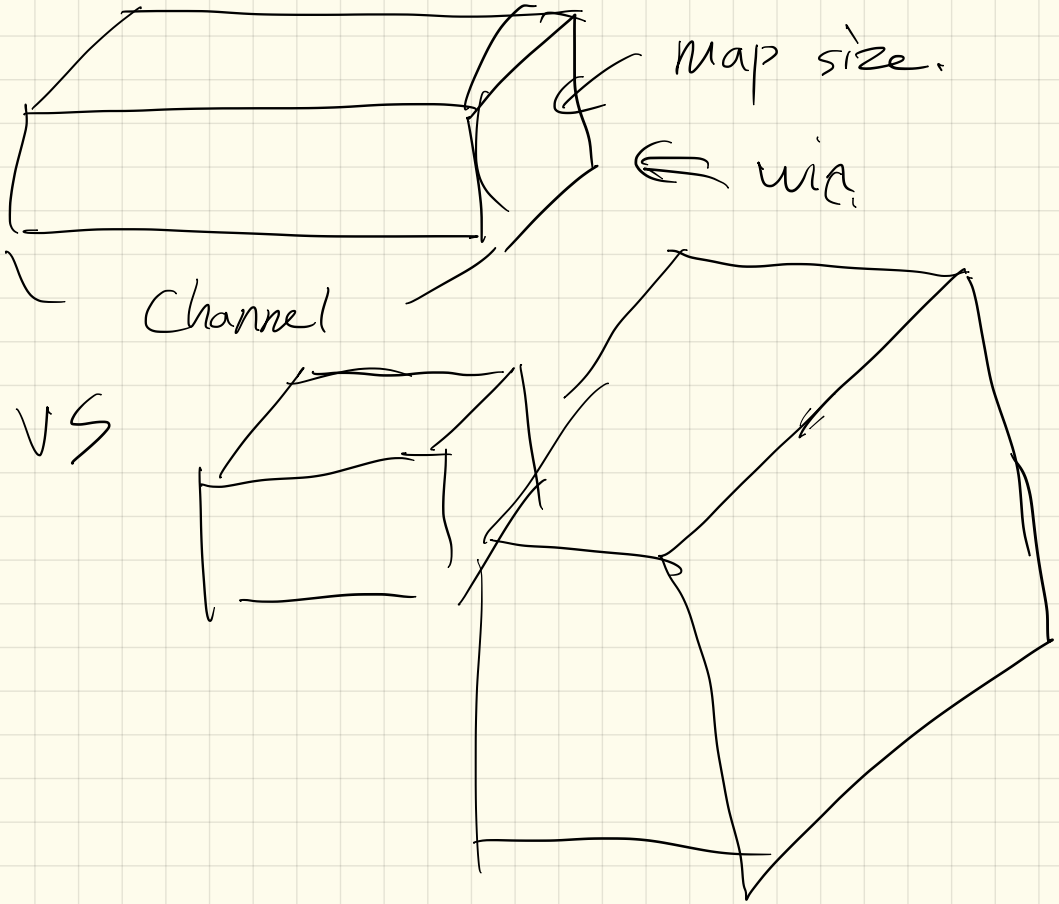
(32×32×3+1) × (28×28×6)





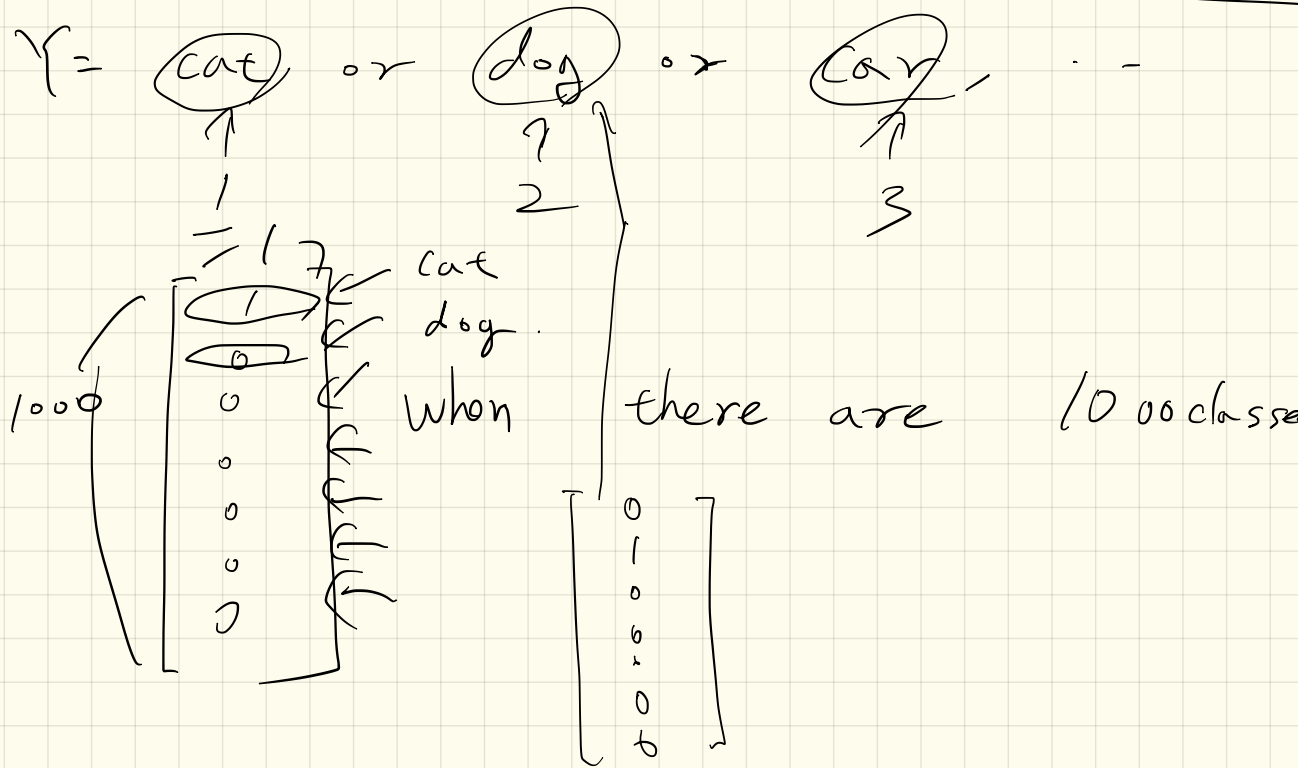
$$Z^{[\ell]} = W^{[\ell]} a^{[\ell-1]} + b^{[\ell]} \quad | \quad a^{[\ell]} = \sigma(z^{[\ell]})$$


7, 9
8
8

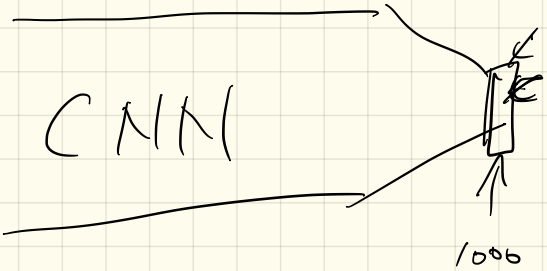

Map size.
Channel
VS

1:30 PM ~ 3:30 PM (wed.)

midterm ↗ time.



Cross entropy with Softmax.



score vector.

$$= \begin{bmatrix} O_1 \\ O_2 \\ \vdots \\ O_{1000} \end{bmatrix} \Rightarrow \begin{bmatrix} P(cat|x) \\ P(dog|x) \\ \vdots \\ \vdots \end{bmatrix}$$

sum → 1

When the output has 1000 classes.

$$\text{Softmax} \Rightarrow \begin{bmatrix} \frac{\exp(O_1)}{\sum_{i=1}^{1000} \exp(O_i)} \\ \frac{\exp(O_2)}{\sum_{i=1}^{1000} \exp(O_i)} \\ \vdots \\ \vdots \end{bmatrix} = \hat{Y}$$

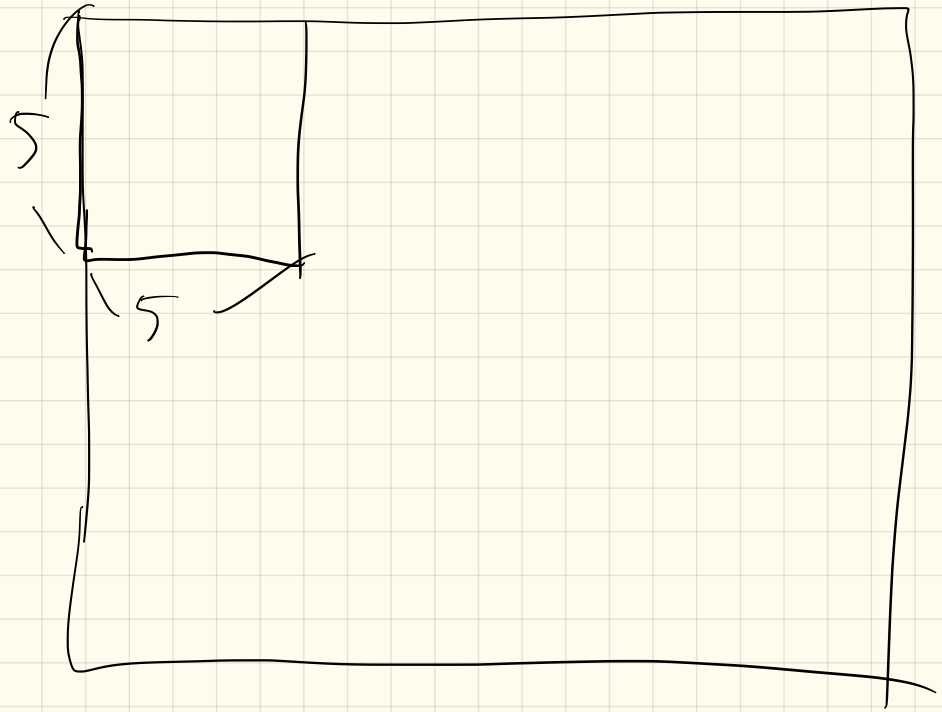
$$\langle Y, \log \hat{Y} \rangle$$

$$\hat{y} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \\ 0 \end{bmatrix} \leftarrow \arg\max_i \; o_i$$

$$\| y - \hat{y} \|_2$$

---

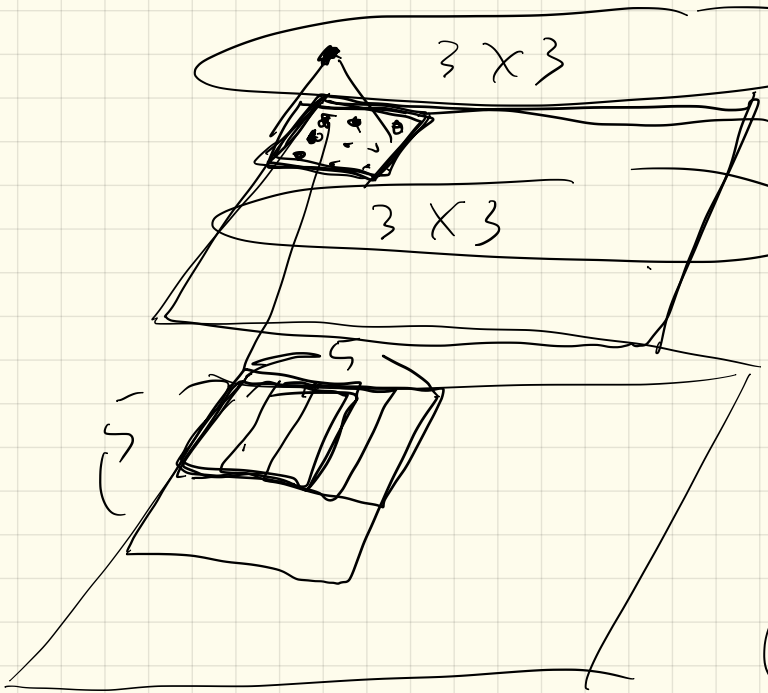
hinge loss: $o_1, \ldots, o_{1000}$



5×5

$25 + 1$

26



Stride = 1
padding = 0

$(3 \times 3 + 1)$
$+ (3 \times 3 + 1)$

20