

$$[0, 1] \times [0, 1] \times [0, 1]$$

## DNN

①  $d$ : dimension 1, 2, 3

②  $n$ : sample size

③  $x$ : observational points

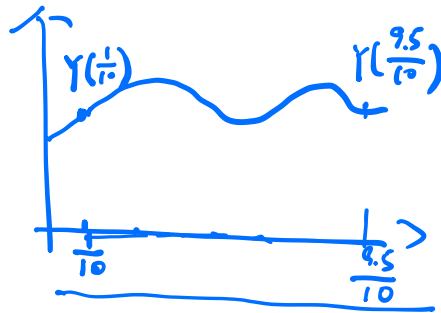
▷  $d=1$ :  $x^T = \left( \frac{1}{10}, \frac{2}{10}, \frac{4}{10}, \dots, \frac{9.5}{10} \right)_{1 \times n}$

▷  $d=2$ :  $x^T = \begin{pmatrix} \frac{1}{10} & \frac{2}{10} & \dots & \dots \\ \frac{2}{10} & \frac{3}{10} & \dots & \dots \end{pmatrix}_{2 \times n}$

$d=3$        $X^T = \begin{pmatrix} \text{---} \\ \text{---} \\ \text{---} \end{pmatrix}_{3 \times 10}$

④  $Y :$   $\begin{pmatrix} \text{---} \\ \text{---} \\ \text{---} \end{pmatrix}_{N \times M}$

1D



1st sample.

⑤  $L$  : depth

$P$  : width

$S$  : dropout rate

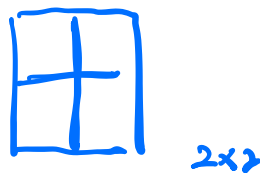
epoch :

Batch :

algorithm :

⑥ Loss function  $\left\{ \begin{array}{l} \text{mse} \\ \text{Huber (Robust)} \end{array} \right.$

Ex:



$$\underline{\left(\frac{1}{2}, \frac{1}{2}\right)}$$

$$\underline{\left(\frac{1}{2}, 1\right)}$$

$$\underline{\left(1, \frac{1}{2}\right)}$$

$$\underline{\left(1, 1\right)}$$

$$Y: \begin{pmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_n \end{pmatrix} \quad \underline{(2500n) \times 1}$$

$$Y_1 = \begin{pmatrix} \text{---} \end{pmatrix} \quad \begin{matrix} \text{1st} \\ \text{Sample} \end{matrix} \quad \underline{2500 \times 1}$$

$$X = \begin{pmatrix} \underline{X_1} \\ \underline{X_2} \\ \vdots \\ \underline{X_n} \end{pmatrix} \quad \underline{(2500n) \times 2}$$

$$X_1 = \begin{pmatrix} \text{---} \\ \vdots \\ \text{---} \end{pmatrix} \quad \underline{2500 \times 2}$$

$$\underline{X_1 = X_2 = \dots = X_n}$$

Size

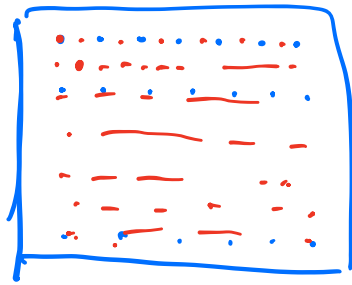
2500n

⑦

$X_{\text{new}}$

$$\begin{pmatrix} \vdots \\ \vdots \\ \vdots \end{pmatrix} \quad \underline{1000}$$

100 x 100



Y new