

PCA is the simplest fundamental technique in machine learning for dimensionality reduction which reduces dataset with # of features  $d$  to  $d'$ , which is very useful in visualizing the dataset.

Principal Component analysis (PCA) { simplest }  
{ fundamental }

(why?)

✓ dimensionality reduction

$x_i \in \mathbb{R}^d \rightarrow d'\text{-dim}$   
 $d' < d$

✓ ① MNIST  $\rightarrow$  784 dim  $\rightarrow$  ② dim  
✓ (visualize) ✓

why?  $\leftarrow$  ②  $d\text{-dim} \rightarrow d'\text{-dim}$   
 $d' < d$   $d' = 10$

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