

• Data set,  $D = \{ \underline{X}, \underline{y} \}$   $\underline{x} \in \mathbb{R}^P$ ,  $y \in \mathbb{R}$

$$\underline{X} = \{x_1, x_2, \dots, x_n\}$$

$$\underline{y} = \{y_1, y_2, \dots, y_n\}$$

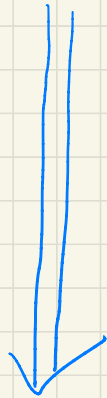
n Samples

- Task specifications:
- ① model accuracy in prediction
  - ② Requirements on computational complexity
  - ③ model interpretability
  - ⋮

Assumption:

$$f_{\text{true}}(\underline{x})$$

underlying regression function.



approximate  $f_{\text{true}}(\underline{x})$

with  $f(\underline{x})$  designed by ourselves!

Select a  
Regression model

① Linear model  
 $f(\underline{x}; \underline{\beta})$

② Nonlinear model  
 $f(X; \underline{\theta})$

Model fitting

<ul style="list-style-type: none"><li>• LS</li><li>• GLS</li><li>• ML</li></ul>	<ul style="list-style-type: none"><li>• Robust</li><li>• Bayesian</li></ul>
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Perform Analysis

- Test for significance
- Residual analysis
- Test for lack of fit

feedback

