

Regularization

정규화 regularization

- 비용 함수에 복잡도에 대한 penalty를 추가
- 과적합에 대한 비용을 optimizing cost에 반영

Ridge regression

$$J(\boldsymbol{\theta}) = \text{SSE}(\boldsymbol{\theta}) + \alpha \|\boldsymbol{\theta}\|^2 \quad (1)$$

LASSO

$$J(\boldsymbol{\theta}) = \text{SSE}(\boldsymbol{\theta}) + \alpha \sum_i |\theta_i| \quad (2)$$

Ridge regression

Ridge regression

$$J(\boldsymbol{\theta}) = \text{SSE}(\boldsymbol{\theta}) + \alpha \|\boldsymbol{\theta}\|^2 \quad (3)$$

- Hyperparameter α 로 두 항목 간의 상대적인 비중을 조절
- Closed form solution $\hat{\boldsymbol{\theta}} = (\mathbf{X}^T \mathbf{X} + \alpha \mathbf{I}_n)^{-1} \mathbf{X}^T \mathbf{y}$

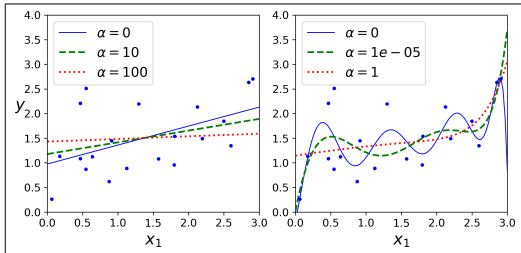


Figure 4-17. Ridge Regression