

Exercises for Lecture 5

1. Ridge regression

Consider the linear regression problem with l_2 regularization with the sum-of-squares error function

$$E(\beta) = (y - X\beta)^T (y - X\beta) + \lambda \beta^T \beta$$

Show that the parameters that minimize the above error function are given by

$$\beta^* = (X^T X + \lambda \mathbf{I})^{-1} X^T y$$

2. Regularization lab

Do the lab in Section 6.6 of ISLR.