

$$y = X\beta$$

$$X^T y = X^T X \beta$$

$$X^T y \cdot (X^T X)^{-1} = \beta$$

ridge reg

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

$\lambda$   
 ridge  
 penalty

$I$   
 identity  
 matrix