

Regularization Lab

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December 12, 2018

Questions to think about

1. Penalty term. Look at the parameter alpha under the Arguments section and the objective function under the Details section of the help file for glmnet.

- a. What piece of the puzzle are they calling the penalty term?

The penalty term is alpha. When using lasso this value is set to 1 and 0 for ridge.

- b. What piece of the puzzle are they calling the objective function?

The objective function is the minimization function that serves as our model.

2. Ridge versus Lasso

- a. What is the main difference between Ridge regression and Lasso?

Ridge regression penalizes the coefficients using a squared term where Lasso uses an absolute value term. This allows Lasso to shrink coefficients down to zero, which serves as a variable selection feature.

- b. When might you be interested in one or the other?

As mentioned above, it would be useful to use Lasso when attempting to identify unnecessary variables. These variables would be reduced to zero indicating they do not improve the model.

3. Notice the output of `cv.glmnet` produces two specific values of λ . What is the difference?

The value of `lambda.min` will provide a model with the smallest Mean Squared Error. The value of `lambda.1se` will provide a model with smaller coefficients since as the value of `lambda` increases, the coefficients shrink to zero.