

Instructions: In these assignments the goal will be to compare the from scratch processes we looked at in class, to the functionality of built-in functions that perform similar tasks. You should compare the functionality of our custom-built examples and the ability to further customize them, to the functionality of package functions. Describe any limitations of the from-scratch versions and the built-in functions. Run an example dataset through both and compare the results.

Submission: Create a Word document that discusses the comparison. Include graphs and explanations here, which package functions you are comparing, etc. With your submission, include your R code file.

Tasks:

1. Compare our examples of penalized regression from class with the glmnet package. What kind of customizations does that package allow? Which customizations require our custom-built algorithms? Run on a sample dataset for comparison.
2. Select three packages that implement Gaussian process regression. Some packages include: BayesGPfit, deepgp, EzGP, FastGP, GauPro, GPBayes, GPfit, gplite, kergp, laGP, mlegp, RobustGaSP, or another package of your choice. Compare the functionality of these packages to our custom algorithms. Which scaling operations are required? Which estimations are done automatically? Which parameters are available to tweak? Which kernels are available? Test on a simple dataset (in one or two variables at most) to compare the outcomes.