

CS771A: Assignment 3

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Generation of Waveforms

Package	mlbench
Documentation	http://artax.karlin.mff.cuni.cz/r-help/library/mlbench/html/mlbench.waveform.html

- *mlbench.waveform* use's Breiman's original waveform generation function which is available at UCI's Machine Learning repository ([https://archive.ics.uci.edu/ml/datasets/Waveform+Database+Generator+\(Version+2\)](https://archive.ics.uci.edu/ml/datasets/Waveform+Database+Generator+(Version+2)))).

Discriminant Analysis

Package	MASS
Documentation	http://cran.r-project.org/web/packages/MASS/MASS.pdf

Gaussian Fitting

Package	mixtools
Documentation	http://cran.r-project.org/web/packages/mixtools/mixtools.pdf

- The gaussians are fit using random sampling.
- We run the algorithm for a fixed number of iterations and sample *nine* points every iteration, *three* for each class.
- Using the *three* offsets, we compute a mixture of gaussians distribution for each class and compute the classification error on the validation set.
- Finally we use the mixture of gaussians with the lowest classification error overall.

Accuracies of the models

Method	Accuracy
Mixtures of Gaussians	0.83
LDA	0.87
QDA	0.866667