# 1 Other Packages

## 1.1 Installing Packages

```
install.packages("caret")
install.packages("mlbench")
install.packages("AppliedPredictiveModeling")
install.packages("kernlab")
install.packages("e1071")
install.packages("pgmm")
```

## 1.2 pgmm

## 1.3 e1071

e1071: Misc Functions of the Department of Statistics (e1071), TU Wien

Functions for latent class analysis, short time Fourier transform, fuzzy clustering, support vector machines, shortest path computation, bagged clustering, naive Bayes classifier, ...

## 1.4 mlbench: Machine Learning Benchmark Problems

A collection of artificial and real-world machine learning benchmark problems, including, e.g., several data sets from the UCI repository.

### 1.4.1 Sonar Data Set

Put Description Here

## 1.5    AppliedPredictiveModeling

This package contains several data set and A few functions from Kuhn's and Johnson's Springer book 'Applied Predictive Modeling'.

### 1.5.1    Fuel Economy Data Set

The http://fueleconomy.gov website, run by the U.S. Department of Energys Ofce of Energy Efciency and Renewable Energy and the U.S. Environmental Protection Agency, lists different estimates of fuel economy for passenger cars and trucks. For each vehicle, various characteristics are recorded such as the engine displacement or number of cylinders. Along with these values, laboratory measurements are made for the city and highway miles per gallon (MPG) of the car.

### 1.5.2    Hepatic Data Set

This data set was used to develop a model for predicting compounds probability of causing hepatic injury (i.e.  liver damage).  This data set consisted of 281 unique compounds; 376 predictors were measured or computed for each. The response was categorical (either "None", "Mild" or "Severe" ),and was highly unbalanced.

This kind of response often occurs in pharmaceutical data because companies steer away from creating molecules that have undesirable characteristics.  Therefore, well-behaved molecules often greatly outnumber undesirable molecules.  The predictors consisted of measurements from 184 biological screens and 192 chemical feature predictors.

The biological predictors represent activity for each screen and take values between 0 and 10 with a mode of 4. The chemical feature predictors represent counts of important sub-structures as well as measures of physical properties that are thought to be associated with hepatic injury.

## 1.6    kernlab: Kernel-based Machine Learning Lab

**Description** Kernel-based machine learning methods for classification, regression, clustering, novelty detection, quantile regression and dimensionality reduction.  Among other methods kernlab includes Support Vector Machines, Spectral Clustering, Kernel PCA, Gaussian Processes and

a QP solver.

cran.r-project.org/web/packages/kernlab/vignettes/kernlab.pdf