Tutorial Week 10 (3/10-6/10)

Tutorial Questions

This week we’ll look at simple regression problem and some robust methods in regression. Please refer Chapter 14 of the textbook and relevant notes.

1. Q14.54 (p475)
2. Q14.57 (p475)
3. Q14.65 (p477)

Extra Practice Problems

1. Do Q14.56 (p475)
2. Do Q14.66 (p477)

Computer Exercise Week 10 : Statistical Tests - STAT2012

1. Consider the data in `fuel.frame`, which has information on makes of cars taken from the April 1990 issue of Consumer Reports.

   (a) Inspect the data in `fuel.frame` in R.

   (b) Create two vectors $x$ and $y$ whose elements correspond to `Weight` (in pounds) and `Fuel` (in gallons per 100 miles) on the data `fuel.frame` respectively.

   (c) Plot `Fuel` against `Weight` with `Weight` on the $x$-axis with label on each axis. Comment on this plot.

   (d) Find the least square regression line for `Fuel` on `Weight` and draw this line on the first plot.

   (e) Plot `Weight` against the residuals of `Fuel` on `Weight`, draw in the line $y = 0$ and comment if there are apparent patten.

   (f) Repeat all of plots given in (c)-(e) with $M$ estimates regression and Robust MM regression, respectively. *Hint: type: `library(MASS)` and then use `rlm(y ~ x, method="M")` and `rlm(y ~ x, method="MM")` respectively.* Also find the regression lines and explain whether there are any obvious difference among three different regression methods.