**Social Robotics**

F. Lindner, L. Wächter, B. Nebel                                    University of Freiburg
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# Exercise Sheet 1
### Due: May 27, 2019

**Exercise 1.1** (Graph Plotting using R (I))

The inbuilt data set `UCBAdmissions` describes the number of admissions and rejections of the six largest departments of Berkeley in 1972 by gender.

(a) For both female and male candidates, calculate the total number of admitted and rejected candidates. Then calculate the relative admittance rates of both males and females.

(b) For both female and male candidates, make separate box plots showing the distribution of admittance probabilities over all departments. Compare the two data sets (female, male) using the Boxplots. Refer to Median and Quartiles.

(c) For both female and male candidates, make stacked bar charts containing the absolute acceptance and rejection numbers per department. Interpret the plots.

**Exercise 1.2** (Graph Plotting using R (II))

The inbuilt data set `mtcars` describes some information about cars from the 70s'. You can get more information about the data set and its variables using `?mtcars`.

(a) Plot the fuel consumption (in galleons per mile) against horse powers in a scatterplot and fit in a regression line for your data points. Note that you can use the inbuilt functions 'lm' and 'abline'to fit a linear model and add it as a straight line to the plot. Describe the relationship between horse power and fuel consumption.

(b) Plot two frequency diagrams for the number of forward gears. One diagram for the cars with automatic transmission and one for the cars with manual transmission. Compare the graphs.