Using R in Data mining for the masses, Chapter 4

Ulrik Hørlyk Hjort

April 5, 2014

1 Modeling

In the following text "the book" will refer to the the book: "Data Mining for the masses"

1.1 Correlation Matrix

The only execise in chapter 4 is how to create an correlation matrix on a data set with with Rapidminer. This is easily done in R. Fiest we import the data set for chapter 4:

```
data = read.csv(‘‘Chapter04DataSet.csv’’, sep=’’,’’,header = TRUE)
```

The we use the buildin **cor()** function in R to get the correlation matrix on our data frame:

```
> cor(data)
               Insulation Temperature Heating_Oil Num_Occupants     Avg_Age
Insulation     1.00000000 -0.79369606  0.73609688   -0.01256684  0.64298171
Temperature   -0.79369606  1.00000000 -0.77365974    0.01251864 -0.67257949
Heating_Oil    0.73609688 -0.77365974  1.00000000   -0.04163508  0.84789052
Num_Occupants -0.01256684  0.01251864 -0.04163508    1.00000000 -0.04803415
Avg_Age        0.64298171 -0.67257949  0.84789052   -0.04803415  1.00000000
Home_Size      0.20071164 -0.21393926  0.38119082   -0.02253438  0.30655725
                Home_Size
Insulation     0.20071164
Temperature   -0.21393926
Heating_Oil    0.38119082
Num_Occupants -0.02253438
Avg_Age        0.30655725
Home_Size      1.00000000
```

which is equal to the correlation matrix shown in Figure 4-4 in the book

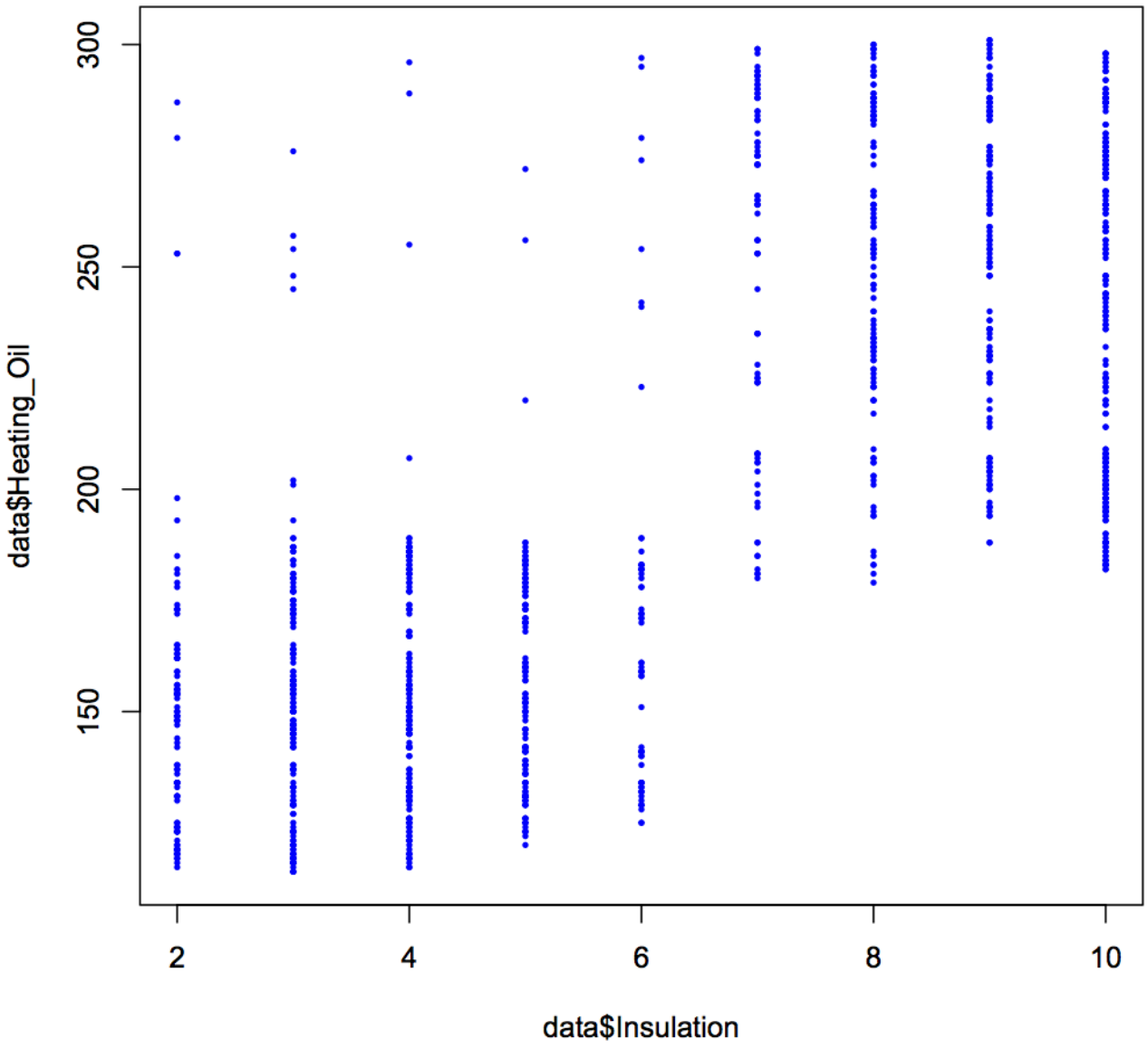
1.2 Correlation plot

Execise 9 in chapter 4 shows an example of a scatter plot between the **Insulation** and Heating_Oil attributes. A equivalent scatter plot can be done in R in the following way:

```
plot(data$Insulation,data$Heating_Oil,col="blue",type="p", pch=20, cex=.5)
```

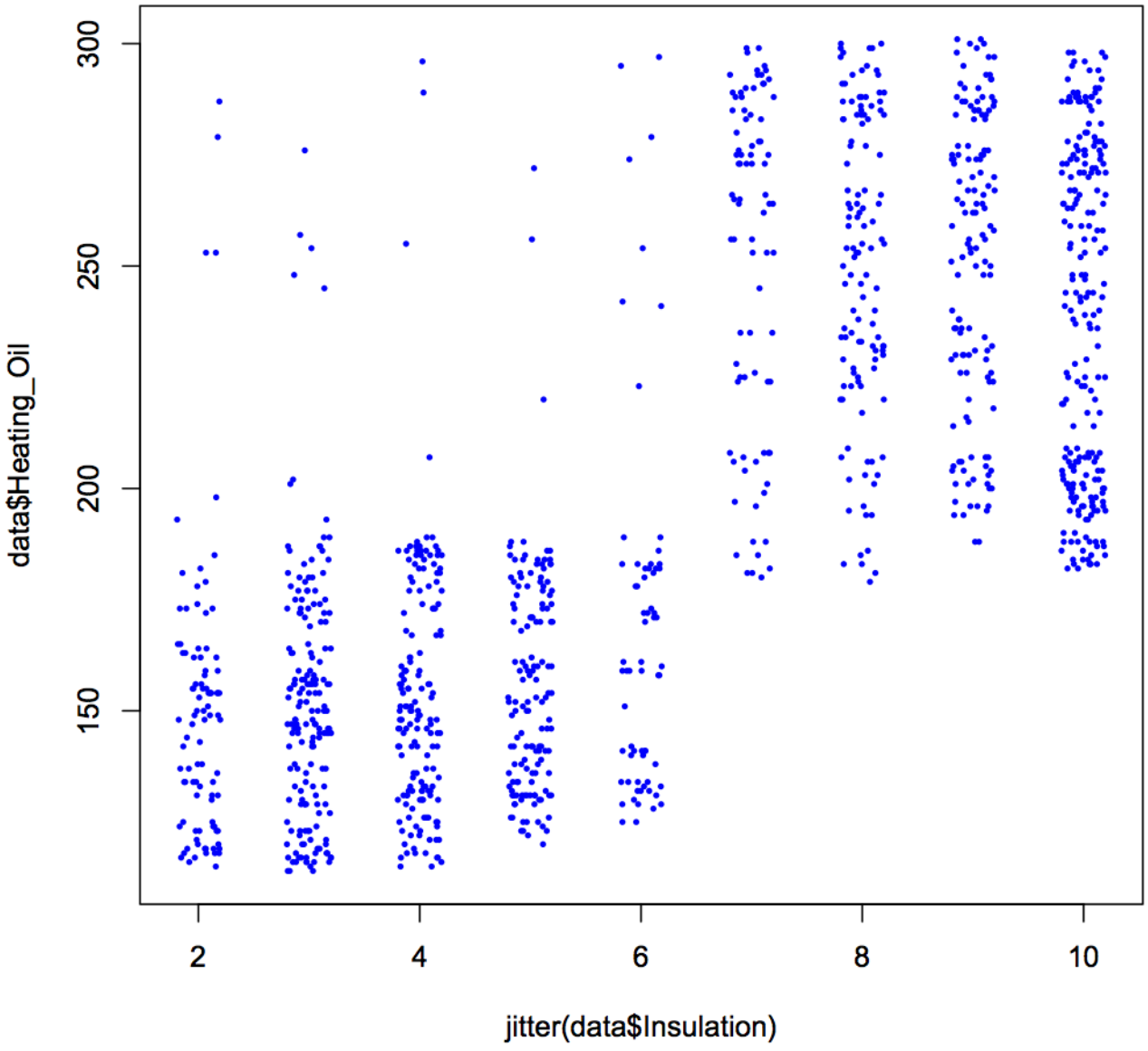
Which generate the following plot:[1]

[1] *Use the R help function* **help(plot)** *to get an complete list and explanation of the different arguments it takes*


data$Heating_Oil
150
200
250
300
2
4
6
8
10
data$Insulation

To prevent the overplotting we can add jitter to the x-axis:

```
plot(jitter(data$Insulation),data$Heating_Oil,col=''blue'',type=''p'', pch=20, cex=.5)
```



The plotting can be made more structured by first create a subset data frame with the attributes we wish to plot:

```
dd <- data.frame(jitter(data$Insulation),data$Heating_Oil)
```

And then:

```
plot(dd)
```

1.3 3D Scatter plot

It is possible to make 3D scatter plots in R with the library "scatterplot3D". If the library is not installed on the system install it with the following command in the R environment and follow the instrctions given.

```
install.packages(‘‘scatterplot3d’’)
```

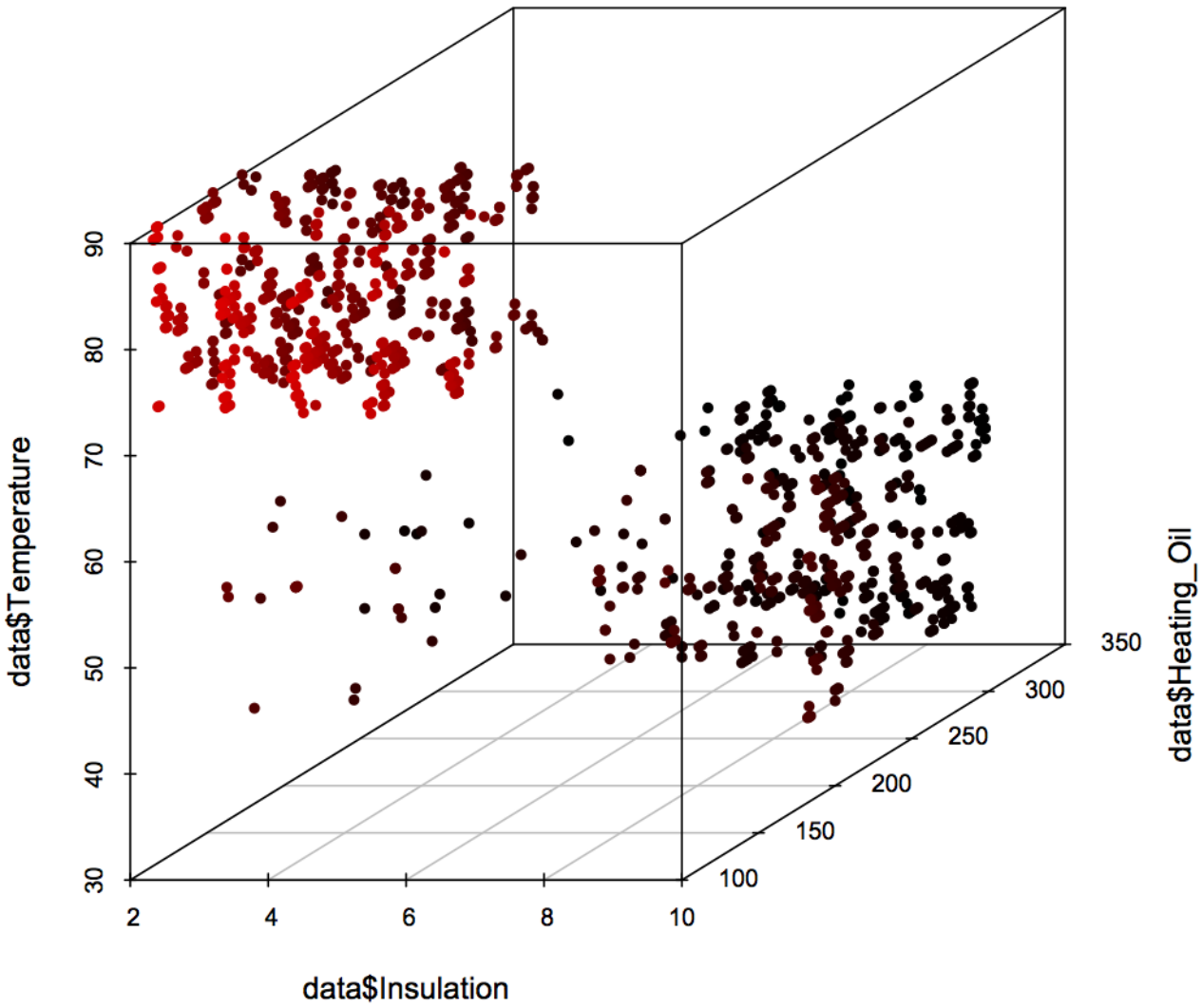
When the library is installed import it with:

```
library(scatterplot3d)
```

And create a 3D scatter plot like the one at Figure 4-9 in the book:

```
scatterplot3d(data$Insulation,data$Heating_Oil,data$Temperature,pch=20,highlight.3d=T)
```

Which gives the following plot:


data$Temperature
30
40
50
60
70
80
90
2
4
6
8
10
data$Insulation
100
150
200
250
300
350
data$Heating_Oil