Experiment 1

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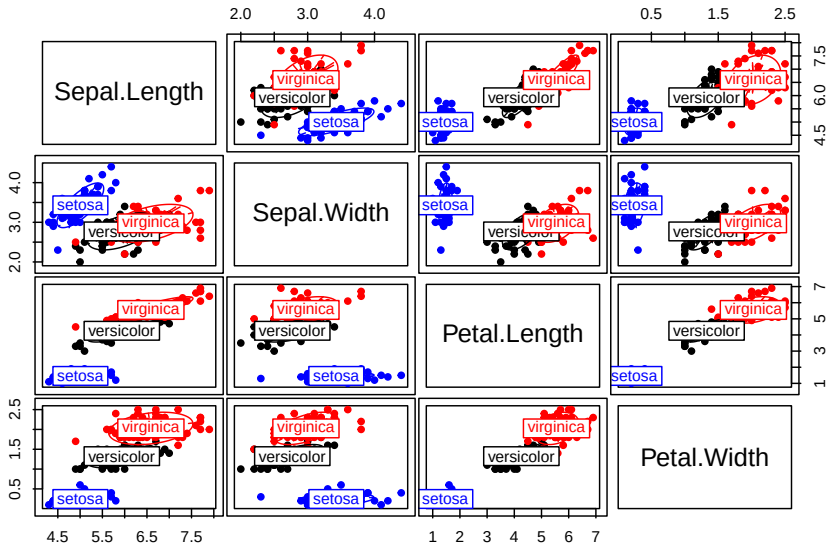
课本复现

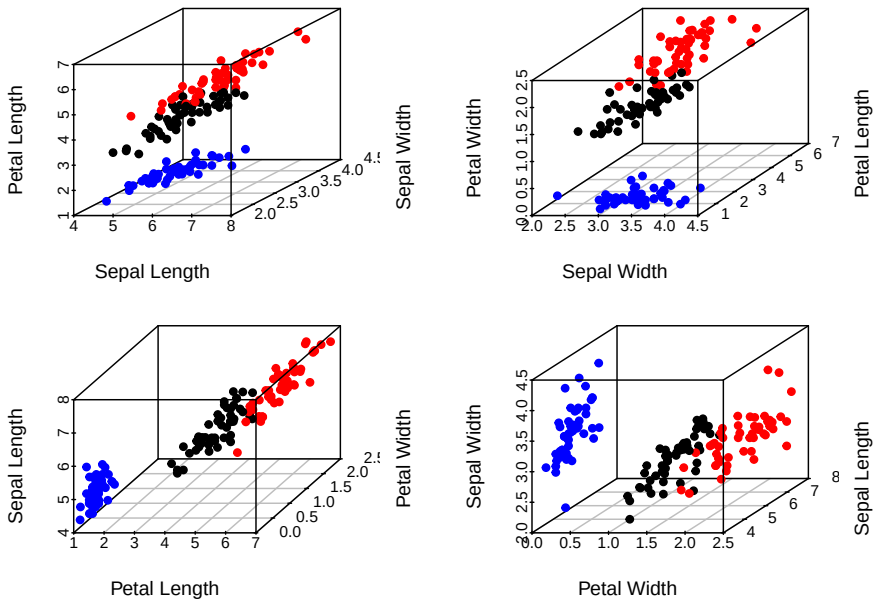
```
library(MASS)
library(ade4)
library(scatterplot3d)
data(iris)

par(mar = c(0, 0, 0, 0))
pane1 <- function(X, Y) {
  XY <- cbind.data.frame(X, Y)
  s.class(XY, iris$Species, include.ori = F, add.p = T, clab = 1.5,
          col = c("blue", "black", "red"), cpoi = 2, csta = 0.5)
}
pairs(iris[, 1:4], panel = pane1)
```




```
detach(package:ade4) # 释放内存

par(mfrow = c(2, 2)); mar0 = c(3, 3, 1, 3)
scatterplot3d(iris[, 1], iris[, 2], iris[, 3], mar = mar0,
              color = c("blue","black", "red")[iris$Species], pch = 19,xlab = "Sepal Le
scatterplot3d(iris[, 2], iris[, 3], iris[, 4], mar = mar0,
              color = c("blue","black", "red")[iris$Species], pch = 19,xlab = "Sepal Wi
scatterplot3d(iris[, 3], iris[, 4], iris[, 1], mar = mar0,
              color = c("blue","black", "red")[iris$Species], pch = 19,xlab = "Petal Le
scatterplot3d(iris[, 4], iris[, 1], iris[, 2], mar = mar0,
              color = c("blue","black", "red")[iris$Species], pch = 19,xlab = "Petal Wi
```




```
detach(package:scatterplot3d)
```

课后习题

习题 5

1. 绘制按物种分组的轮廓图、雷达图和气泡图

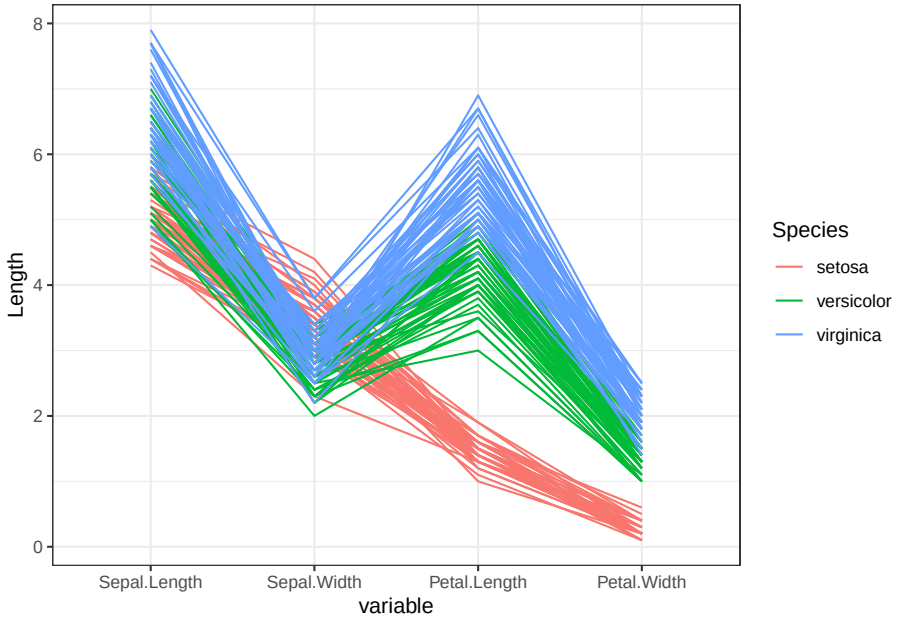
- 轮廓图

```
library(ggplot2)
library(GGally)
```

```
## Registered S3 method overwritten by 'GGally':
##   method from
##   +.gg   ggplot2
```

```
ggparcoord(iris, columns = 1:4, groupColumn = 5, scale = "globalminmax") +
theme_bw() +
```

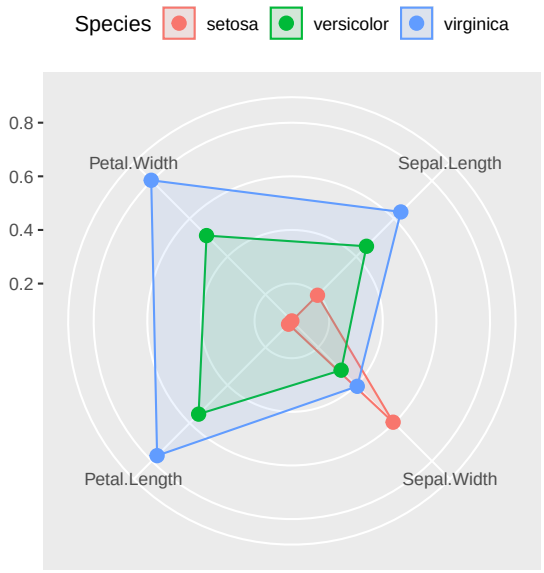
```
labs(y = "Length")
```




```
detach(package:GGally)
```

- 雷达图

```
library(ggiraphExtra)
ggRadar(data=iris, aes(group=Species), alpha=0.1)
```



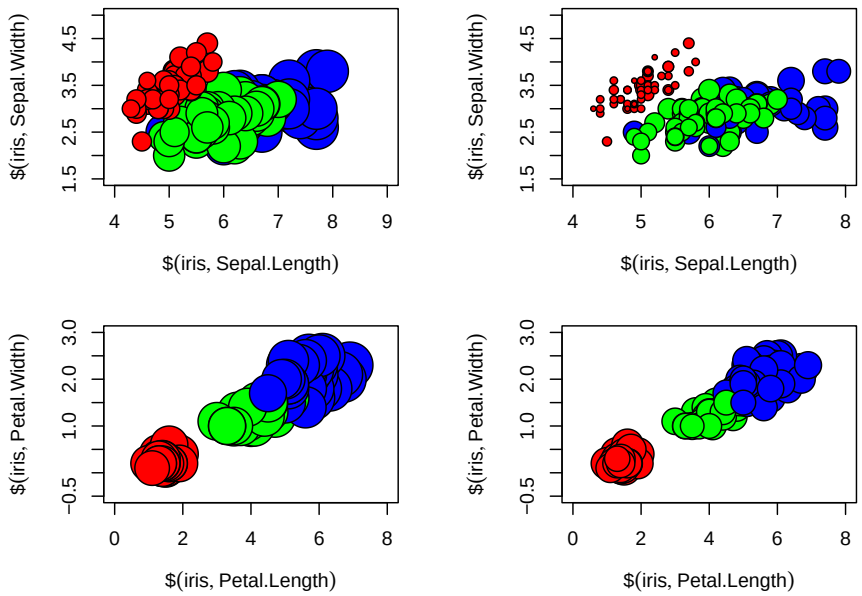

```
detach(package:ggiraphExtra)
```

- 气泡图

```
library(DescTools)
par(mfrow = c(2, 2), mar = c(4, 5, 2, 2))

bubble <- function(x, y, area){
  colors <- c("setosa"="red", "versicolor"="green", "virginica"="blue")
  PlotBubble(x, y, col=colors[iris$Species],xlab=substitute(x),ylab=substitute(y),
             cex=0.1, area=area)
}


bubble(iris$Sepal.Length, iris$Sepal.Width, iris$Petal.Length)
bubble(iris$Sepal.Length, iris$Sepal.Width, iris$Petal.Width)
bubble(iris$Petal.Length, iris$Petal.Width, iris$Sepal.Length)
bubble(iris$Petal.Length, iris$Petal.Width, iris$Sepal.Width)
```

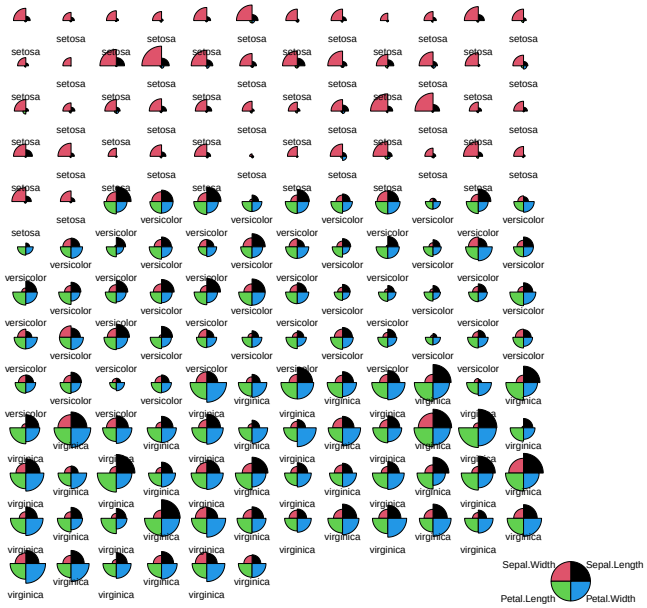



```
detach(package:DescTools)
```

2. 绘制星图和脸谱图

- 星图

```
data.m=as.matrix(iris[,1:4])
rownames(data.m) = iris[,5]
stars(data.m,draw.segments=T,cex=0.45, key.loc=c(30, 1.4), mar=c(0.1,1,0.1,0.1))
```



- 脸谱图

画出部分数据脸谱，150 行数据无法全部画出

```
library(aplpack)
```

```
## Registered S3 method overwritten by 'aplpack':
##   method       from
##   plot.bagplot DescTools
```

```
set.seed(210810209)
faces(data.m[sample(1:nrow(data.m), 28, replace=F),], face.type = "ellipse", scale=T)
```


```
## effect of variables:
##  modified item       Var
##  "height of face   " "Sepal.Length"
##  "width of face    " "Sepal.Width"
##  "structure of face" "Petal.Length"
##  "height of mouth  " "Petal.Width"
##  "width of mouth   " "Sepal.Length"
##  "smiling          " "Sepal.Width"
##  "height of eyes   " "Petal.Length"
##  "width of eyes    " "Petal.Width"
##  "height of hair   " "Sepal.Length"
##  "width of hair    "  "Sepal.Width"
##  "style of hair    "  "Petal.Length"
##  "height of nose   "  "Petal.Width"
##  "width of nose    "  "Sepal.Length"
##  "width of ear     "  "Sepal.Width"
##  "height of ear    "  "Petal.Length"
```

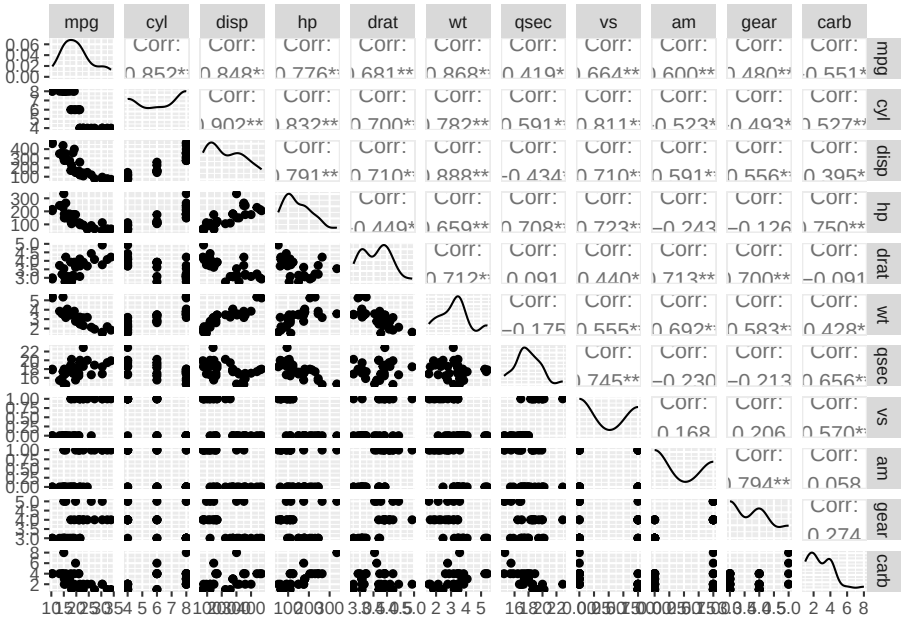
```
detach(package:aplpack)
```

习题 6

1. 绘制该数据集的矩阵散点图

```
data(mtcars)

library(GGally)
ggpairs(mtcars)
```




```
detach(package:GGally)
```

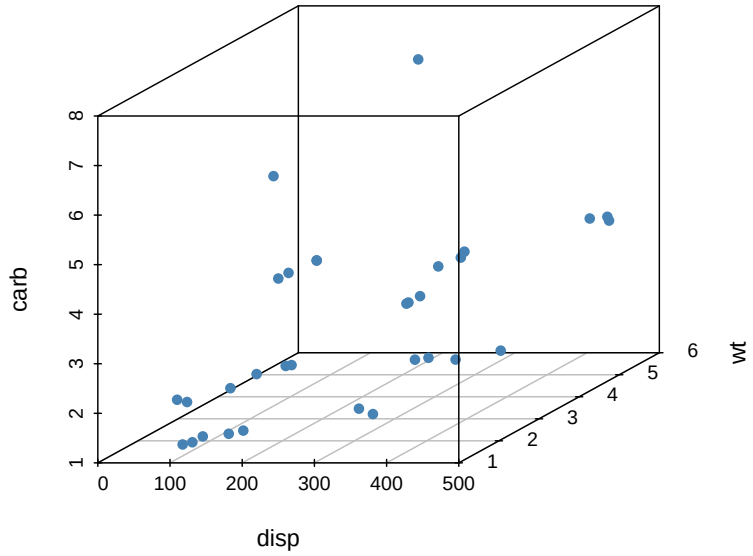
2. 绘制该数据集中任意三个变量的三维散点图和气泡图

以下两张图片均选择 disp, wt, carb 作为三个特征变量绘图

- 三维散点图

```
library(scatterplot3d)

scatterplot3d(x=mtcars$disp, y=mtcars$wt, z=mtcars$carb,
              color = "steelblue", pch = 16, mar=c(4, 3, 1, 7),
              xlab = "disp",ylab = "wt",zlab = "carb")
```

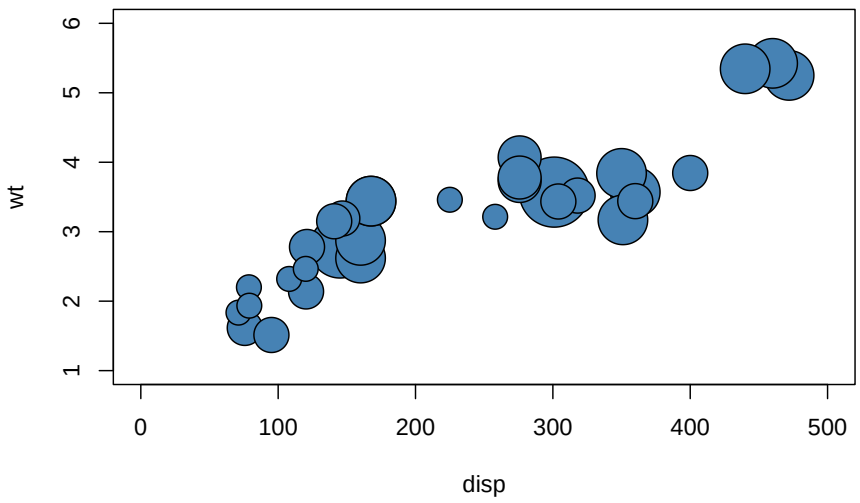



```
detach(package:scatterplot3d)
```

- 气泡图

```
library(DescTools)

PlotBubble(x=mtcars$disp, y=mtcars$wt, col="steelblue",
           xlab="disp",ylab="wt",
           cex=0.1, area=mtcars$carb)
```




```
detach(package:DescTools)
```