# *mlass*: Machine Learning Algorithms

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## 1 Linear Regression with one variable

```
> data(ex1data1)
> theta <- c(0,0)
> linReg <- gradDescent(X, y, theta, alpha=0.01, max.iter=1500)
> getTheta(linReg)
```

```
          [,1]     [,2]
[1,] -3.630291 1.166362
```

## 2 K-Means algorithm

```
> data(ex7data2)
> initCentroids <- matrix(c(3,3,6,2,8,5), byrow=T,ncol=2)
> xx <- kMeans(X, centers=initCentroids)
> xx["clusters"]
```

```
  [1] 1 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 [28] 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 [55] 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 [82] 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2
[109] 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
[136] 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
[163] 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
[190] 2 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
[217] 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 2 3 3 3
[244] 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 2 3 3 3 3
[271] 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
[298] 3 3 1
```

## 3 Session Information

The version number of R and packages loaded for generating the vignette were:

```
> plot(linReg, xlab="Population of City in 10,000s", ylab="Profit in $10,000s")
```

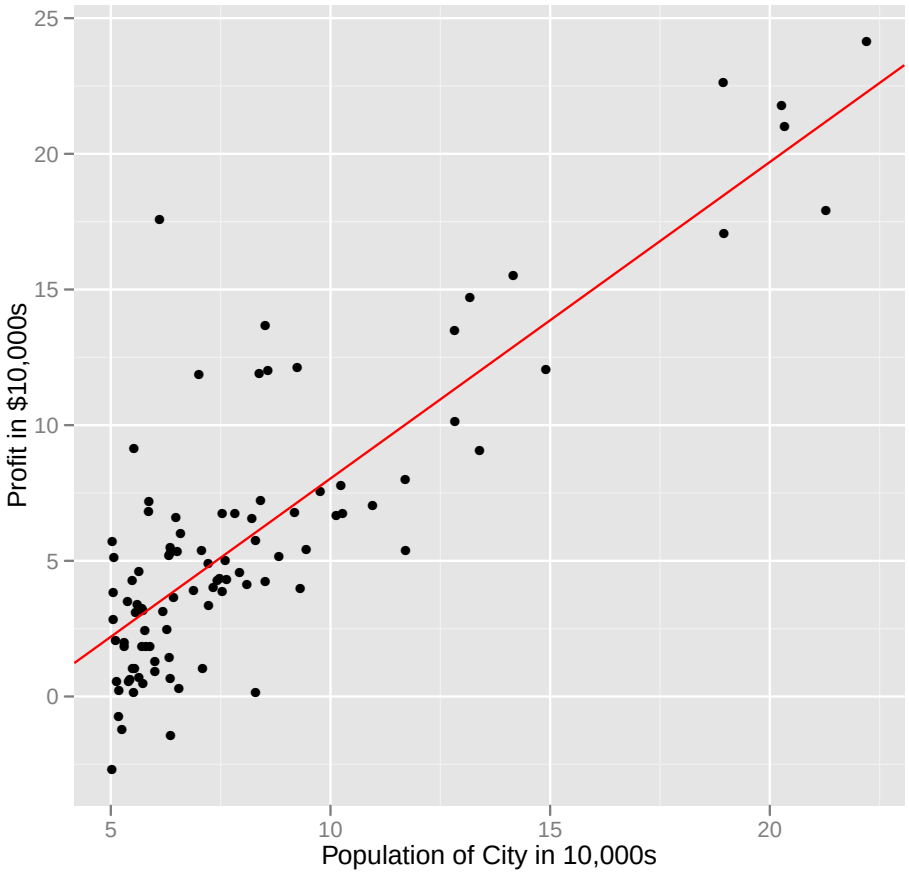


Figure 1: Linear Regression with One Variable

```
> plot(xx, trace=TRUE, title="Iteration number 10")
```

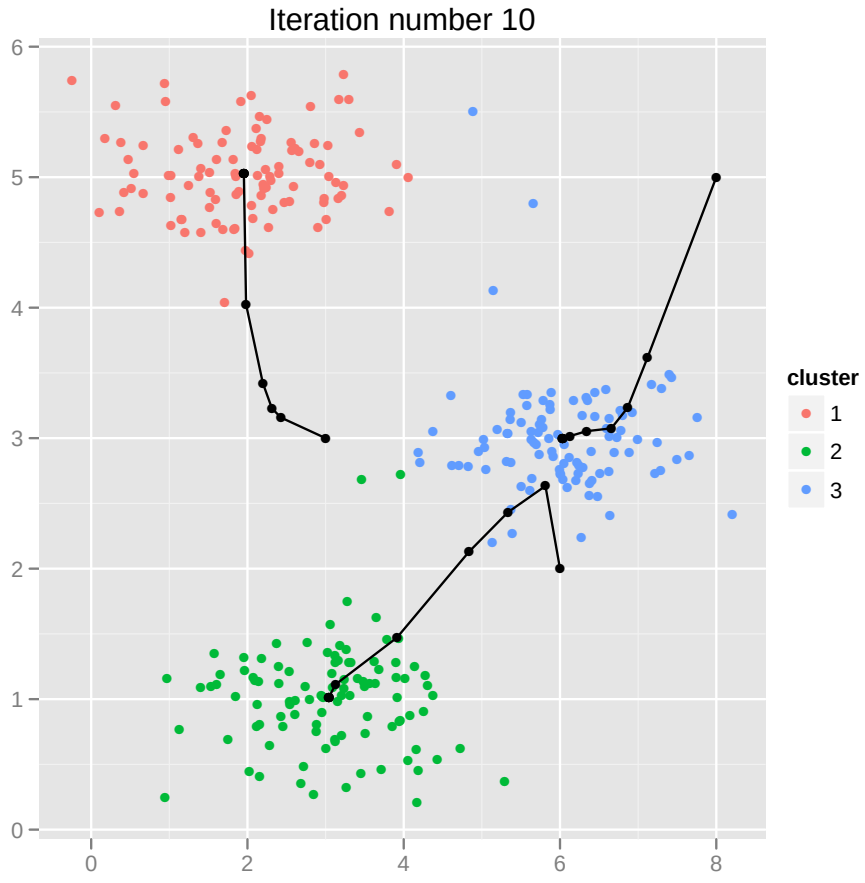


Figure 2: kMeans algorithm for clustering

```
R version 2.15.0 (2012-03-30)
Platform: i686-pc-linux-gnu (32-bit)

locale:
 [1] LC_CTYPE=en_US.UTF-8       LC_NUMERIC=C
 [3] LC_TIME=en_US.UTF-8        LC_COLLATE=C
 [5] LC_MONETARY=en_US.UTF-8    LC_MESSAGES=en_US.UTF-8
 [7] LC_PAPER=C                 LC_NAME=C
 [9] LC_ADDRESS=C               LC_TELEPHONE=C
[11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C

attached base packages:
[1] stats     graphics  grDevices utils     datasets
[6] methods   base

other attached packages:
[1] ggplot2_0.9.0 mlass_0.2.3

loaded via a namespace (and not attached):
 [1] MASS_7.3-17        RColorBrewer_1.0-5
 [3] colorspace_1.1-1   dichromat_1.2-4
 [5] digest_0.5.2       grid_2.15.0
 [7] memoise_0.1        munsell_0.3
 [9] plyr_1.7.1         proto_0.3-9.2
[11] reshape2_1.2.1     scales_0.2.0
[13] stats4_2.15.0      stringr_0.6
[15] tools_2.15.0
```