Lab 2 - Computational Statistics

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Assignment 1

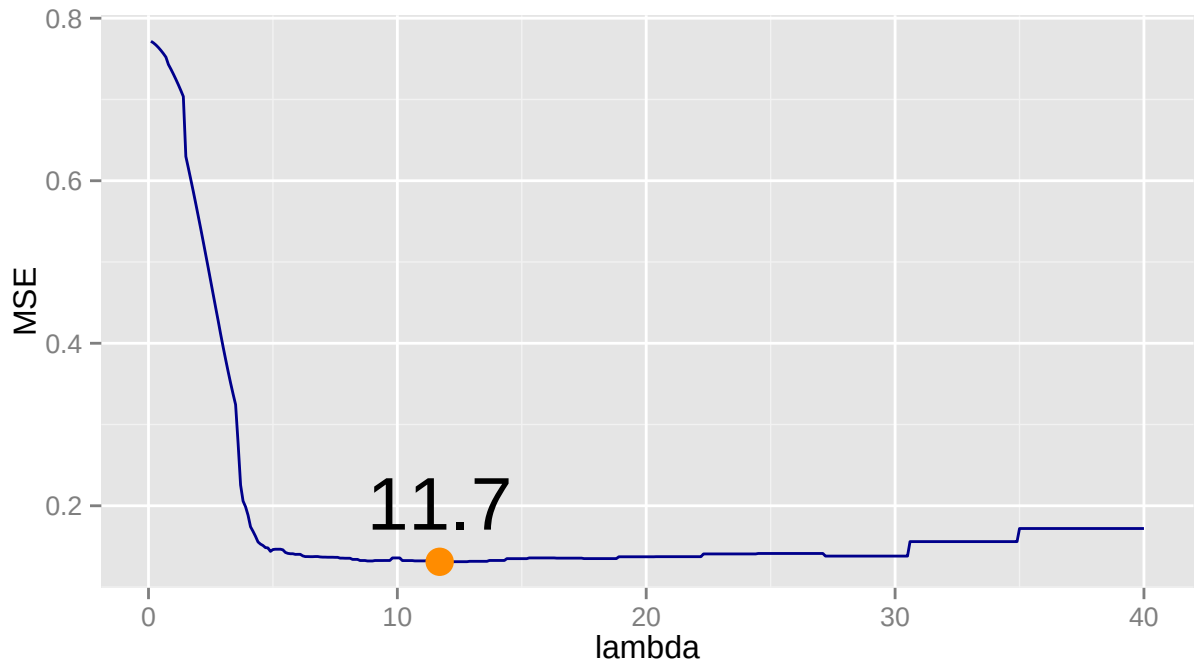
1.1-1.2

Data is imported and splitted into a training set and a test set.

Thereafter, the function *myMSE* is written. It takes the arguments pars (a list including *X*, *Y*, *XTest* and *YTest*) and the argument *lambda*. The latter parameter specifies the penalty parameter *enp.target* in *loess*. The *myMSE* function then uses *loess* to make a model which is evaluated on the test set. Returned by *myMSE* is the predictive MSE.

```
myMSE <- function(lambda, pars){
  model <- loess(pars$Y~pars$X, data=pars[1:2], enp.target = lambda)
  Pred <- predict(model, newdata=pars$Xtest)
  MSE <- (1/length(pars$Y)) * sum((Pred-pars$Ytest)^2)
  print(MSE)
  return(MSE)
}
```

1.3



1.4

```
## [1] 0.1358018
## [1] 0.1412809
## [1] 0.1326581
## [1] 0.1401702
## [1] 0.1325391
## [1] 0.1321441
## [1] 0.1325542
## [1] 0.1321441
## [1] 0.1325391
## [1] 0.1321441
## [1] 0.1321441
## [1] 0.1321441
## [1] 0.1321441
## [1] 0.1321441
## [1] 0.1321441
## [1] 0.1321441
## [1] 0.1321441
```

```
## $minimum
## [1] 10.69361
##
## $objective
## [1] 0.1321441
```

1.5

```
## [1] 0.1719996
## [1] 0.1719996
## [1] 0.1719996
```

```
## $par
## [1] 35
##
## $value
## [1] 0.1719996
##
## $counts
## function gradient
##        1        1
##
## $convergence
## [1] 0
##
## $message
## NULL
```

Assignment 2

2.1-2.2