

POLITECNICO DI MILANO — COMO CAMPUS



PATTERN ANALYSIS AND MACHINE INTELLIGENCE 2015-2016  
prof. Matteo Matteucci

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# Homework report

Project Repository

Click

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# 1 Preface

Initial task and sources are available by the following link.

The homework consists of four parts:

- Linear regression.
- The curse of dimensionality.
- Classification with LDA.
- Color quantization with K-means.

## 2 Linear regression

### 2.1 Task

Try to run LinearRegressionDemo.R: supposing your current working directory is the one where you unpacked the R files, type:

```
source("LinearRegressionDemo.R",print.eval=TRUE)
```

The `print.eval` parameter is needed to show you the output of some commands such as *summary* in the context of the *source* command.

Run the demo and try answering the questions you find there. In some cases you should be able to do that immediately after looking at the results, in others you will first need to add few lines of code to actually *get* any result. If you find yourself stuck anywhere, all the material you should need is either in the script itself or in the lab notes.

### 2.2 Solution

## 3 The curse of dimensionality

### 3.1 Task

Try to run CurseDimDemo.r: supposing your current working directory is the one where you unpacked the R files, type

```
source("CurseDimDemo.r",print.eval=TRUE)
```

The `print.eval` parameter is needed to show you the output of some commands such as *summary* in the context of the *source* command.

Run the demo and try answering the questions you find there. In some cases you should be able to do that immediately after looking at the results, in others you will first need to add few lines of code to actually *get* any result. If you find yourself stuck anywhere, all the material you should need is either in the script itself or in the lab notes.

### 3.2 Solution

## 4 Classification with LDA

### 4.1 Task

Try to run *ClassificationDemo.R*: supposing your current working directory is the one where you unpacked the R files, type

```
source("ClassificationDemo.R")
```

Run the demo and try answering the questions you find there. In some cases you should be able to do that immediately after looking at the results, in others you will first need to add few lines of code to actually *get* any result. If you find yourself stuck anywhere, all the material you should need is either in the script itself or in the lab notes.

### 4.2 Solution

## 5 Color quantization with K-means

### 5.1 Task

Try to run *ClusteringDemo.R*: supposing your current working directory is the one where you unpacked the R files, type

```
source("ClusteringDemo.R")
```

Run the demo and try answering the questions you find there. In some cases you should be able to do that immediately after looking at the results, in others you will first need to add few lines of code to actually *get* any result. If you find yourself stuck anywhere, all the material you should need is either in the script itself or in the lab notes.

### 5.2 Solution