Introduction to Machine Learning

May 16, 2019

Concept

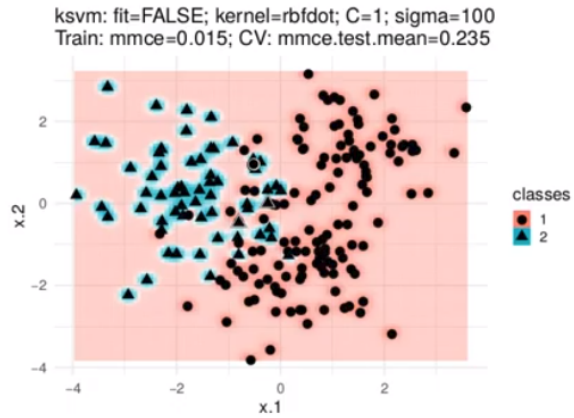
The course is organized as a digital lecture, which should be as self-contained and enable self-study as much as possible:

- Slides with lecture videos
- Interactive tutorials
- Complemented by a week-long inverted-classroom block course

Concept - Lecture Videos

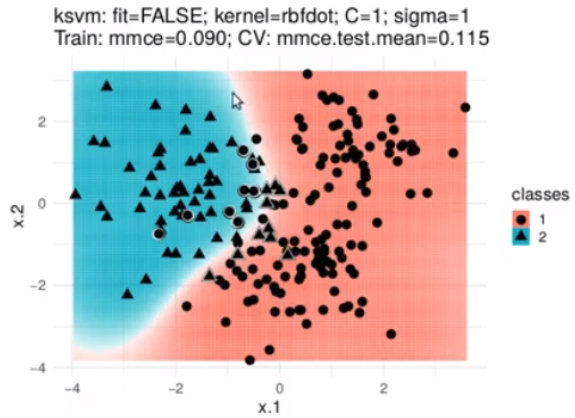
OVERFITTING

Overfitting learner

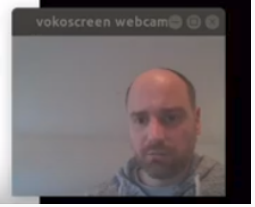


Better training set performance
(seen examples)

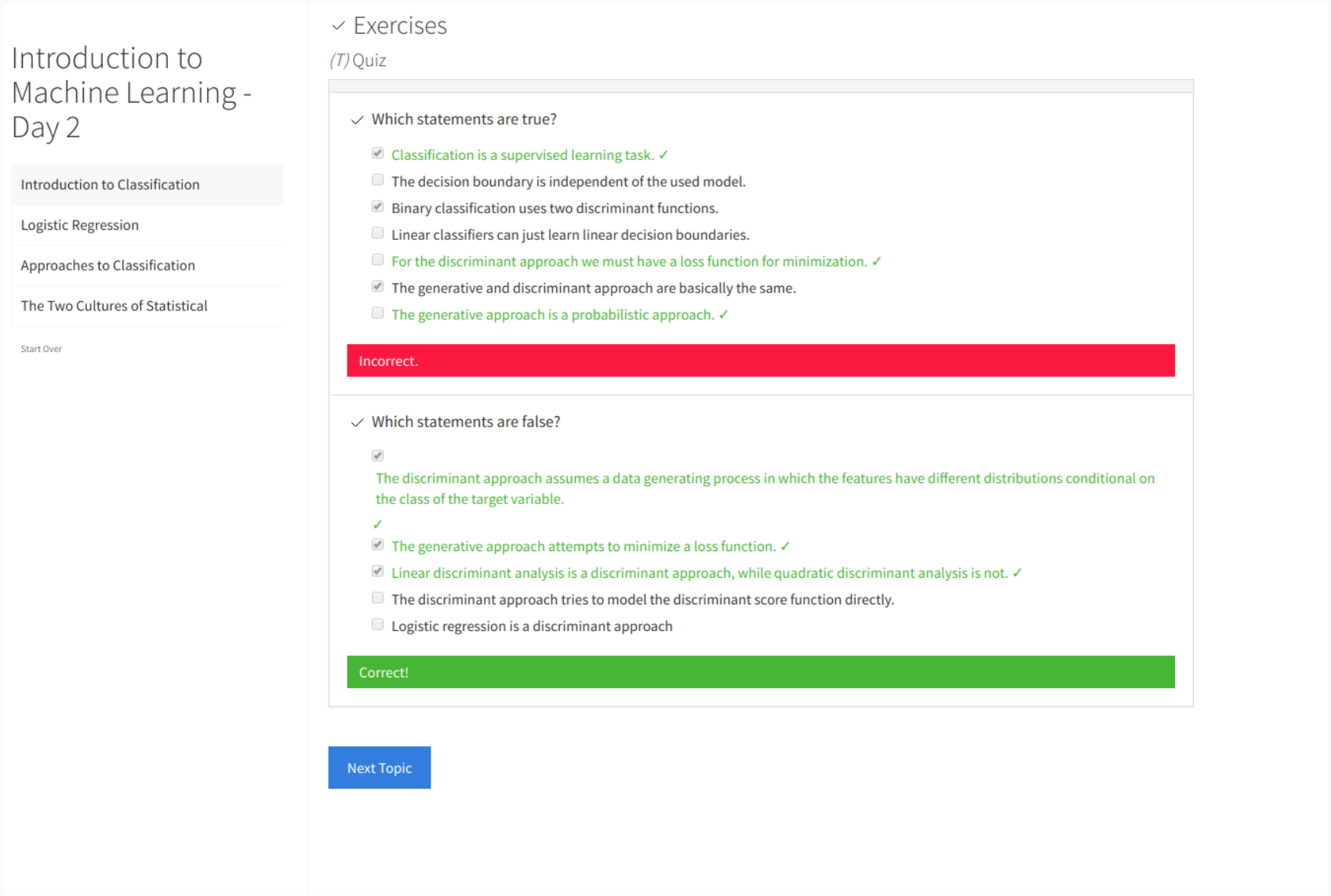
Non-overfitting learner



Better test set performance
(unseen examples)



Concept - Interactive Tutorials (Quiz)



Concept - Interactive Tutorials (Examples)

Introduction to Machine Learning - Day 2

- Introduction to Classification
- Logistic Regression
- Approaches to Classification
- The Two Cultures of Statistical

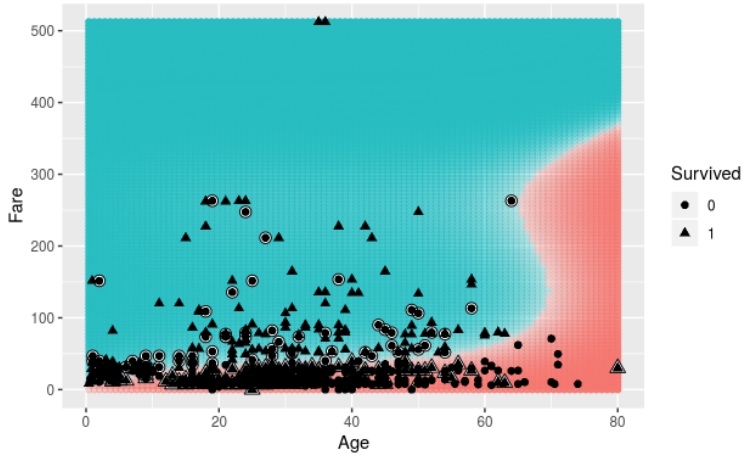
Start Over

(P) Training a logistic regression with non-linear decision boundaries

The next demonstration shows how to include the features `Age` and `Fare` as polynomials and the effect on the decision boundary. As mentioned in the video, it is possible to transform a linear classifier into a non-linear classifier by just mapping features into a higher dimensional feature space (feature map):

Code | Start Over | Run Code

```
1 library(ggplot2)
2
3 # Change degree and threshold here:
4 degree = 3
5 threshold = 0.5
6
```



Previous Topic | Next Topic

Check it out for yourself:

`compstat-lmu.github.io/lecture_i2ml`

Technologies:

- Videos: very basic free screen-capture programs (`Kazaam, vokoscreen`)
- Tutorials/Website: (no HTML/CSS skills required) `Rmarkdown + shiny + learnr + testwhat`
- Webhosting:
  - Videos: YouTube (free)
  - Website: Github (free)
  - Coding Exercise: `shinyapps.io` (free for limited traffic)