INF3490/INF4490 Exercises - Week 8

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October 30, 2016

$\mathbb{P}$ marks the programming exercises, we strongly recommend using the python programming language for these. Exercises may be added/changed after publishing.

1 SVM vs MLP

What advantages and disadvantages are there to support vector machines (svm) versus multilayer perceptrons (mlp)? What problems do they both suffer from?

2 Kernel functions

What is a kernel function? Which are the most common kernel functions and roughly what kind of transformations do they correspond to?

3 Soft Margins

What two factors must be balanced when using an SVM with soft margin?

4 Ensemble

Try to come up with a few cases when using an ensemble of classifiers where it would be fine to just pick the most popular class, and where you would want to have the majority in favor of a single class or even full consensus.

5 Principle Component Analysis

What is the motivation behind principle component analysis?

6 Covariance

Work out the covariance between the x and y dimensions of the following 2-dimensional data set. Describe what the results indicate about the data.

Index	1	2	3	4	5
x	10	39	19	23	28
y	43	13	32	21	20

Table 1: Two-dimensional data set

Contact and Github

Corrections of grammar, language, notation or suggestions for improving this material are appreciated. E-mail me at **olehelg@uio.no** or use **GitHub** to submit an issue or create a pull request. The **GitHub repository** contains all source code for assignments, exercises, solutions, examples etc. As many people have been involved with writing and updating the course material, they are not all listed as authors here. For a more complete list of authors and contributors see the **README**.