

## INF3490 exercises - week 8 2013

### Problem 1

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

### Problem 2

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

### Problem 3

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

### Problem 4

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

### Problem 5

What is the motivation behind principle component analysis?

### Problem 6

Work out the covariance between the  $x$  and  $y$  dimensions of the following 2-dimensional data set, and describe what the results indicates about the data.

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