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## Ensembles of selected classifiers and clusters

Topic 2 – Learning more from what we already know

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### Introduction

We review methods to use ensembles of selected classifiers to achieve classification rules with increased accuracy (Gul et al. 2016, Khan et al. 2016). Feature selection methods are often used as preprocessing method. For example after preprocessing microarray data with 500 000 probes and 22 125 features (probesets) which represent genes, we use a proposal to improve feature selection of microarray data based on a proportional overlapping score (Mahmoud et al. 2014).

We investigate ensemble methods for cluster analysis. Using ensemble concepts Stoyanov (2015) developed an R package to use hierarchical clustering as preprocessing for k-means clustering. In addition we discuss proposals to use nonparametric and parametric bootstrap resampling and distance based variance estimation (Felsenstein 1985; Lausen & Degens, 1987; Degens, Lausen & Vach 1990) to derive a statistical evaluation of clusters.

### Conclusions

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