Ensemble Learning!

1 Introduction

The combination of several different machine learning techniques into one algorithm, is ensemble learning. Ensembled methods are used to either improve predictions (stacking), decrease variance (bootstrappeg aggregration or bagging) or bias (boosting).

They are largely divided into two groups, based on how the primitive base learners are generated i.e., *sequential* ensemble methods and *parallel* ensemble methods.

The most helpful way to distinguish between the above (or determine which to use in a particular scenarior) is to consider the basic motivation of the two methods. Sequential methods seek to exploit the dependence between the base learners, while parallel methods seek to exploit the independence between the learners.

In scenarios where the former is most useful, we can think of simple examples where the overall performance increases by weighing previusly mislabelled examples with higher weights. For the latter, the error can be reduced by averaging.