Classification algorithms

- (Linear Regression)

- Dummy Classifier — no boundary

- Logistic Regression — straight line
  gradual transition of p's

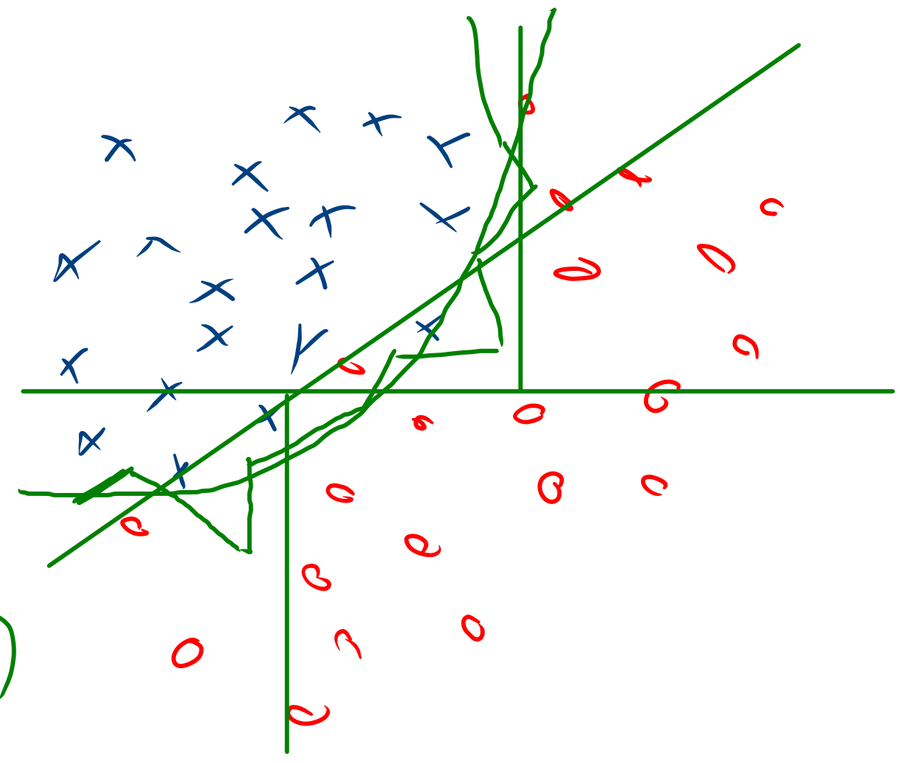
- Naive Bayes — quadratic curve (parab. / hyperb / straight)
  gradual

- Linear / Quadratic Discriminant Analysis — linear: line
  quad: quadr.

- Decision Stump / Tree — stump: hor/vert line
  tree: rectangles

- k-Nearest Neighbor (lazy learner) — piecewise linear

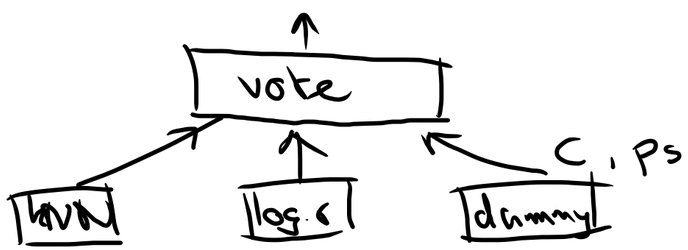
- Support Vector Machine — depends on kernel



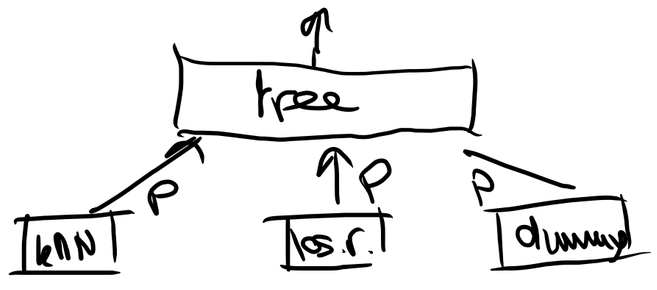
Ensemble learning (meta-learners)

Use many base-classifiers and subsequently combine their individual predictions to derive a better "group" prediction

- Voting (hard voting: predict the most common label; soft voting: combine the probabilities)

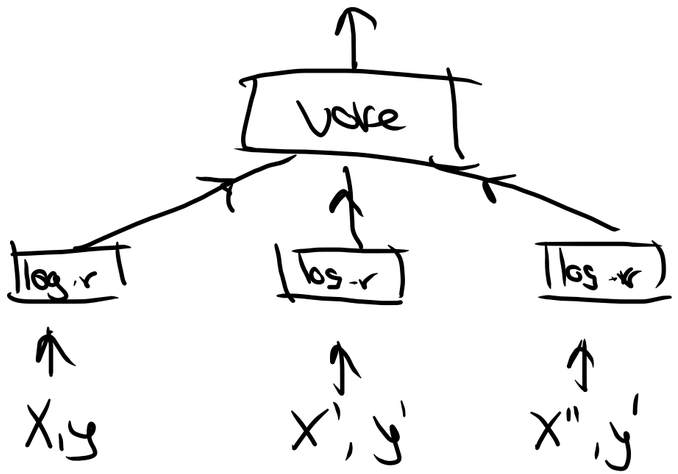


- Stacking / Blending



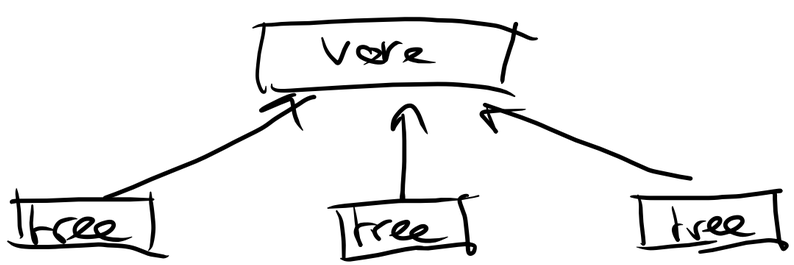
- Bagging

One type of base-clafficier, trained with different training data using selection with replacement



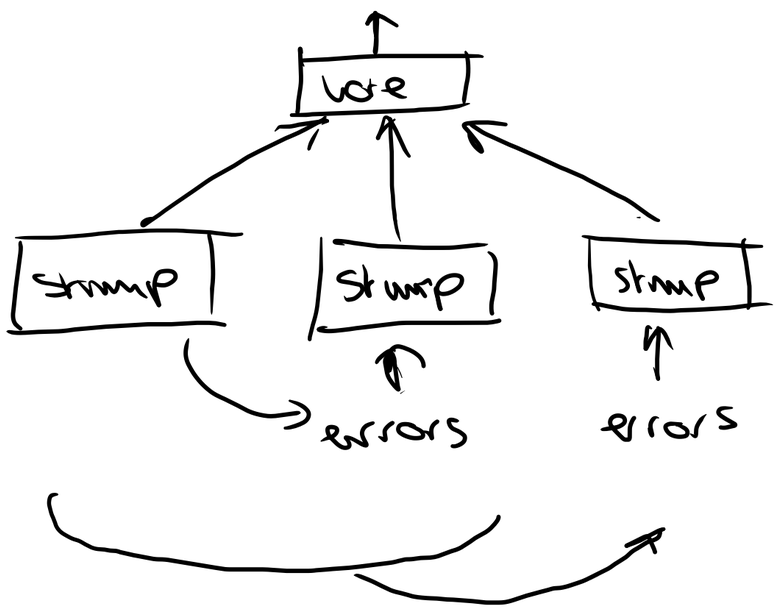
- Randomization

One type of vase-classifier, but it include some "randomness" (in particular: Random Forest)



- Boosting:

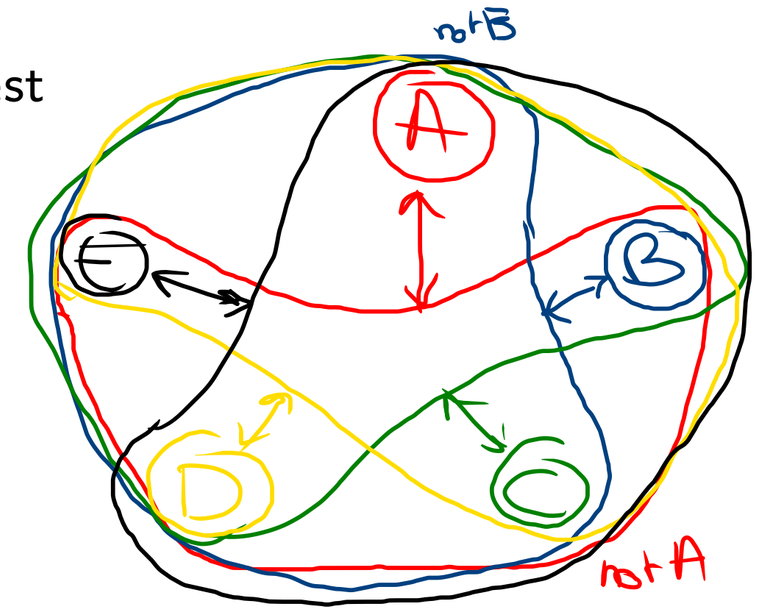
The base classifiers are trained on the errors that the previous base-classifiers make



Multiclass-classification

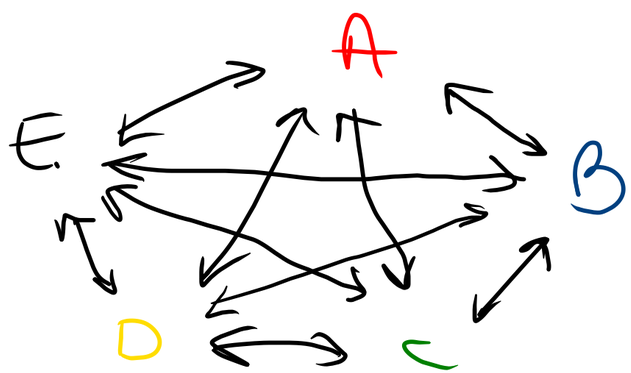
Achieve multiclass-classification using an ensemble of binary base-learners

- One vs. All / Rest



if I have N classes, I train N classifier

- One vs. One



if I have N classes, I train $\frac{1}{2}N(N-1)$