Method, error metric, cross-validation:

Method:

Data choices, form of response, models, error metrics, betting systems, summary statistics

1. Generate k week averages for datum for k = [1,2,…8]; feature creation
   1. Use all and only features, even those that are not in dataset for many/most years
      1. Use n previous seasons to train model; data choice
         1. Give all data the same weight in training; weighting data
            1. Regression; form of response

Decision trees; model

Model setting 1; tuning parameter settings

RMSE; error metric

Bet recommendation performance; error metric

Bet on all games; betting system

Classification accuracy; summary statistic

Bet when absolute value of difference with actual line is greater than b\_1; betting system

Classification accuracy; summary statistic

Classification accuracy AND magnitude; summary statistic

Weighted by magnitude of difference classes

Weighting systems …

Summary statistics …

Bet when greater than b\_2; betting system

Summary statistics …

Betting systems …

Bet performance AND variance of week-to-week performance

Error metrics …

Tuning parameter settings …

Random Forest; model

Error metrics …

Given distribution of random forests, have ‘posterior’ estimate, quantiles. Bet when actual line is in ‘low’ or ‘high’ quantile, no bet otherwise. Same error metric choices as in regression -> decision trees.

Models …

* + - * 1. Classification followed by regression; form of response

Setting A (number of classes and breakpoints); class setting

Decision trees; model

Random forests; model

Models …

Setting B; class setting

Models…

Class settings …

* + - * 1. Forms of response…
      1. Weight recent data more strongly in training, error, summary statistic; weighting data
      2. Weighting data …
    1. Data choices …
  1. Imputation to guess missing years data
  2. Only use data that is shared between all seasons
  3. Generate additional features; team strength scores, etc.

1. Generate k week averages for datum for k = [1,2,4,8]; feature creation
2. Feature creation choices …