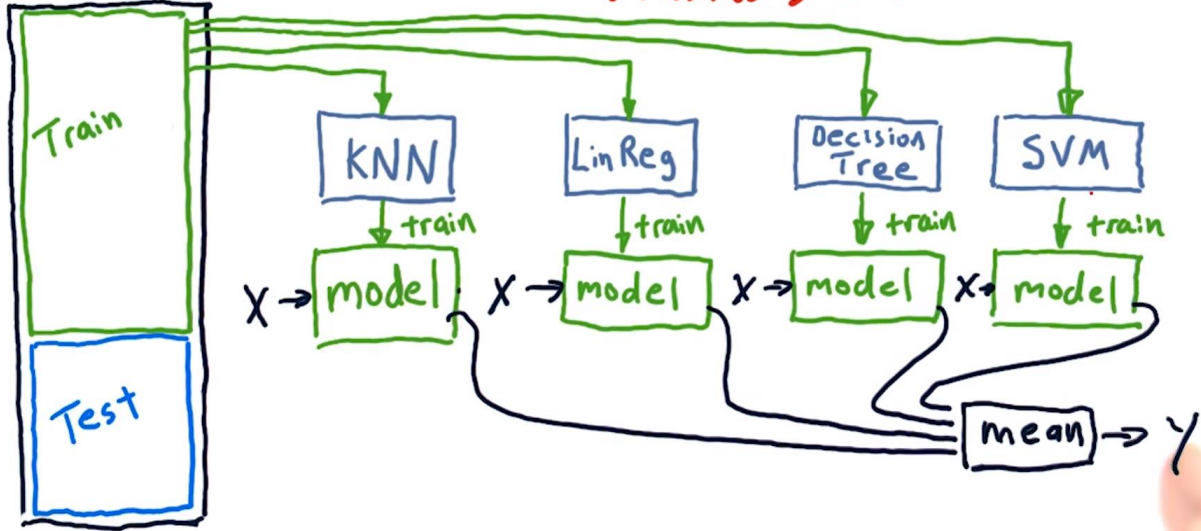


# Ensemble learners

Why ensembles?

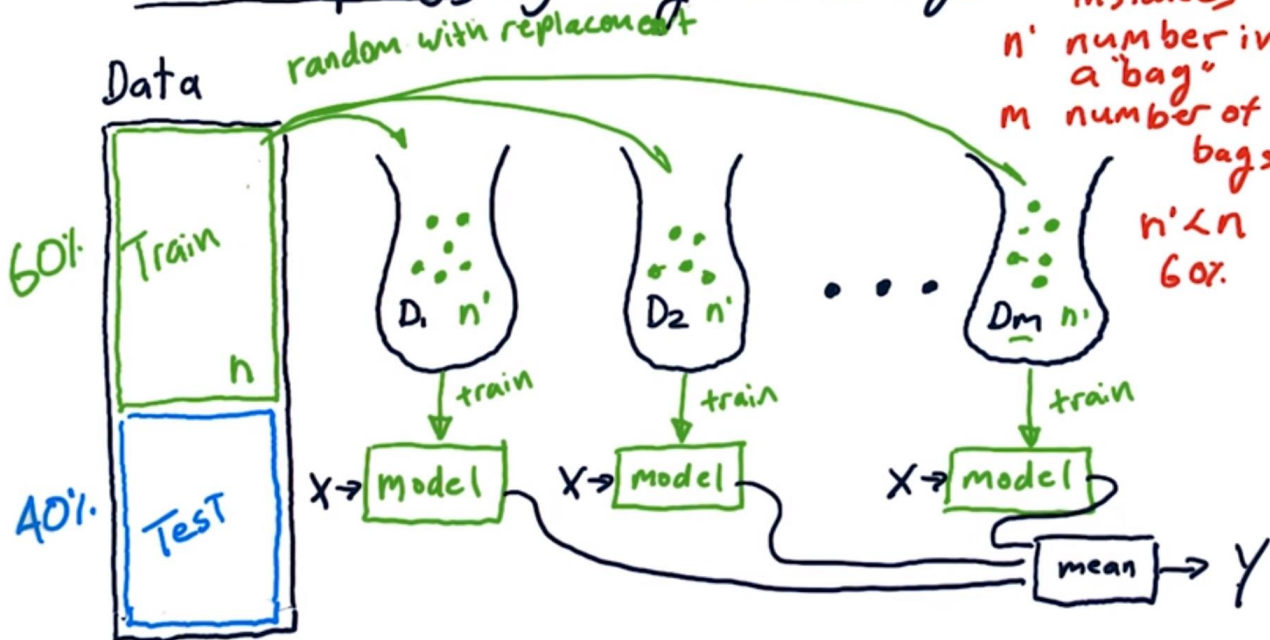
- Lower error
- Less overfitting
- Tastes great

Data



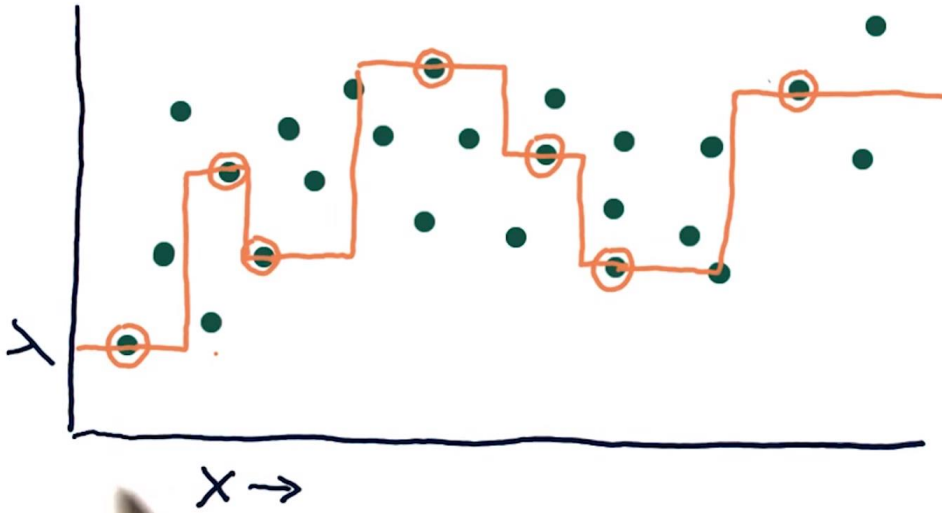
# Bootstrap aggregating - bagging

$n$  number of instances  
 $n'$  number in a "bag"  
 $m$  number of bags  
 $n' < n$   
60%

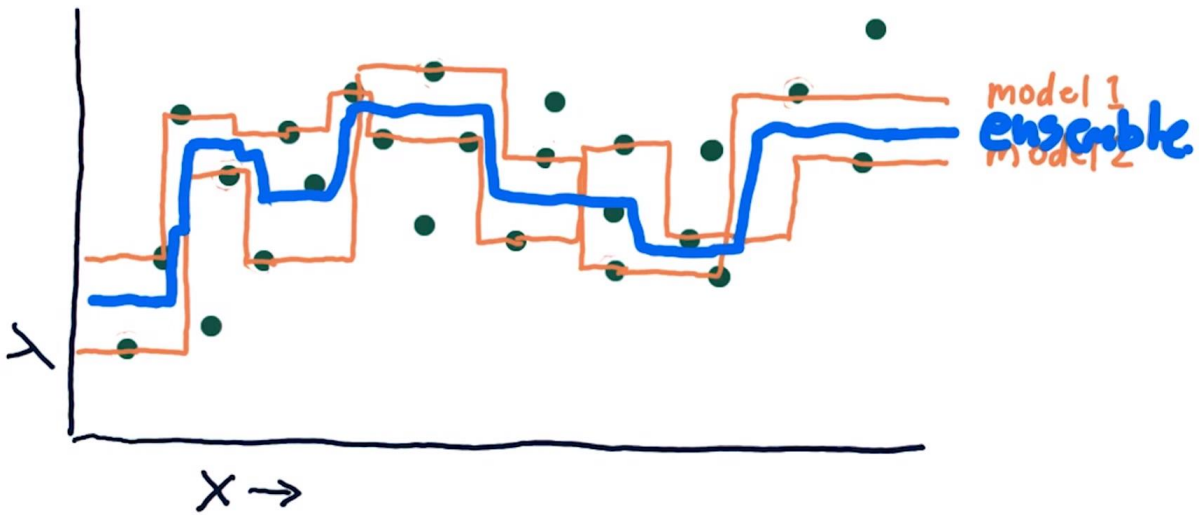


Bagging Example:

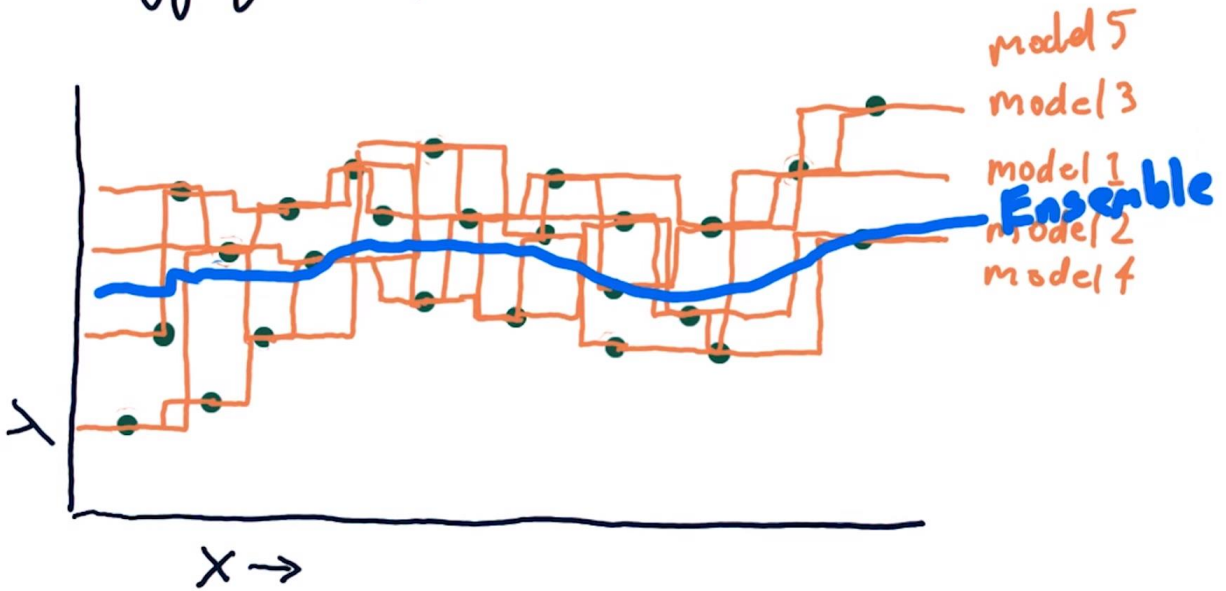
# Bagging example



# Bagging example



# Bagging example



Ada-Boost: A simple variation on Bagging

# Boosting: Ada Boost

