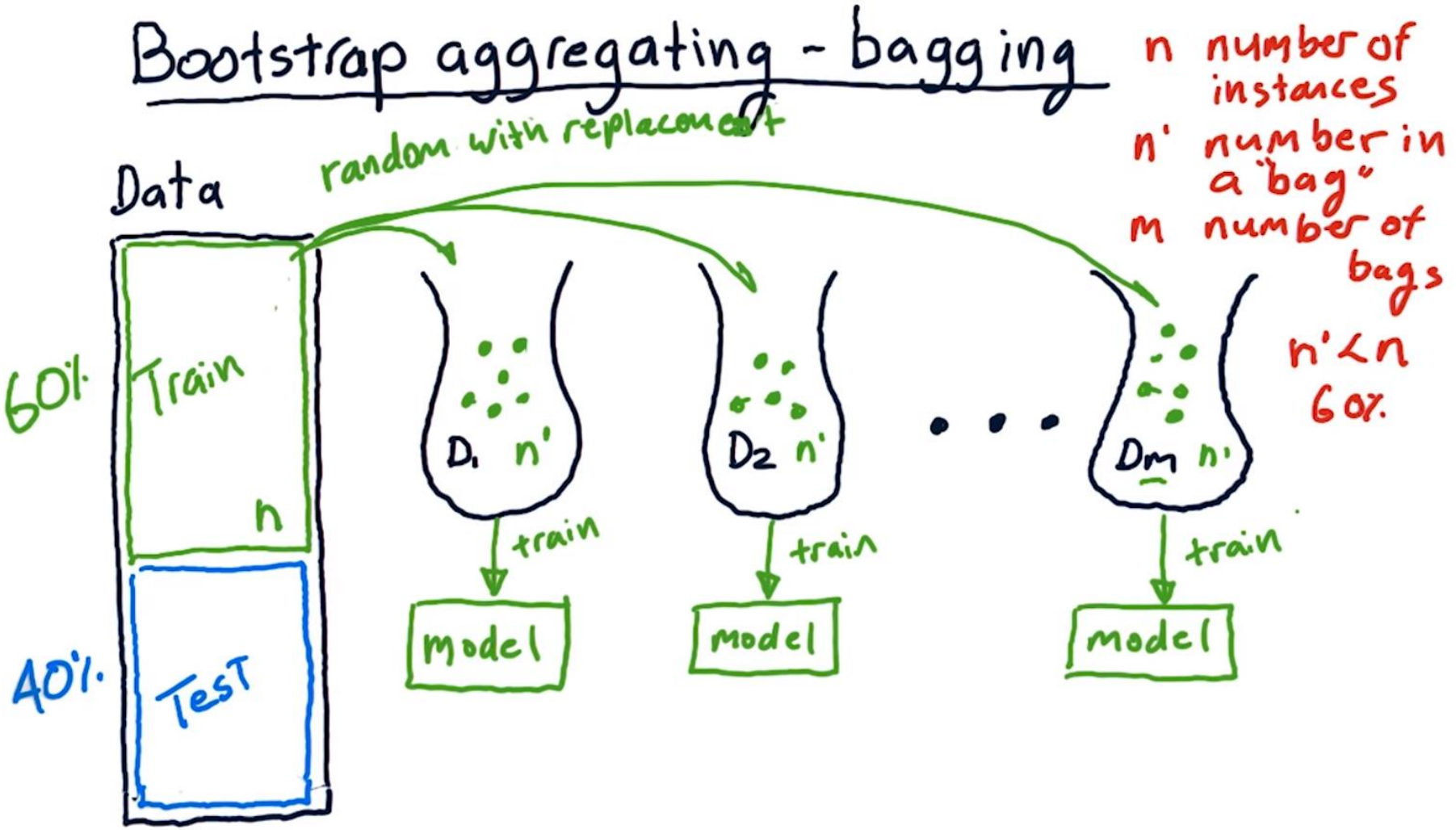
# Ensemble Methods

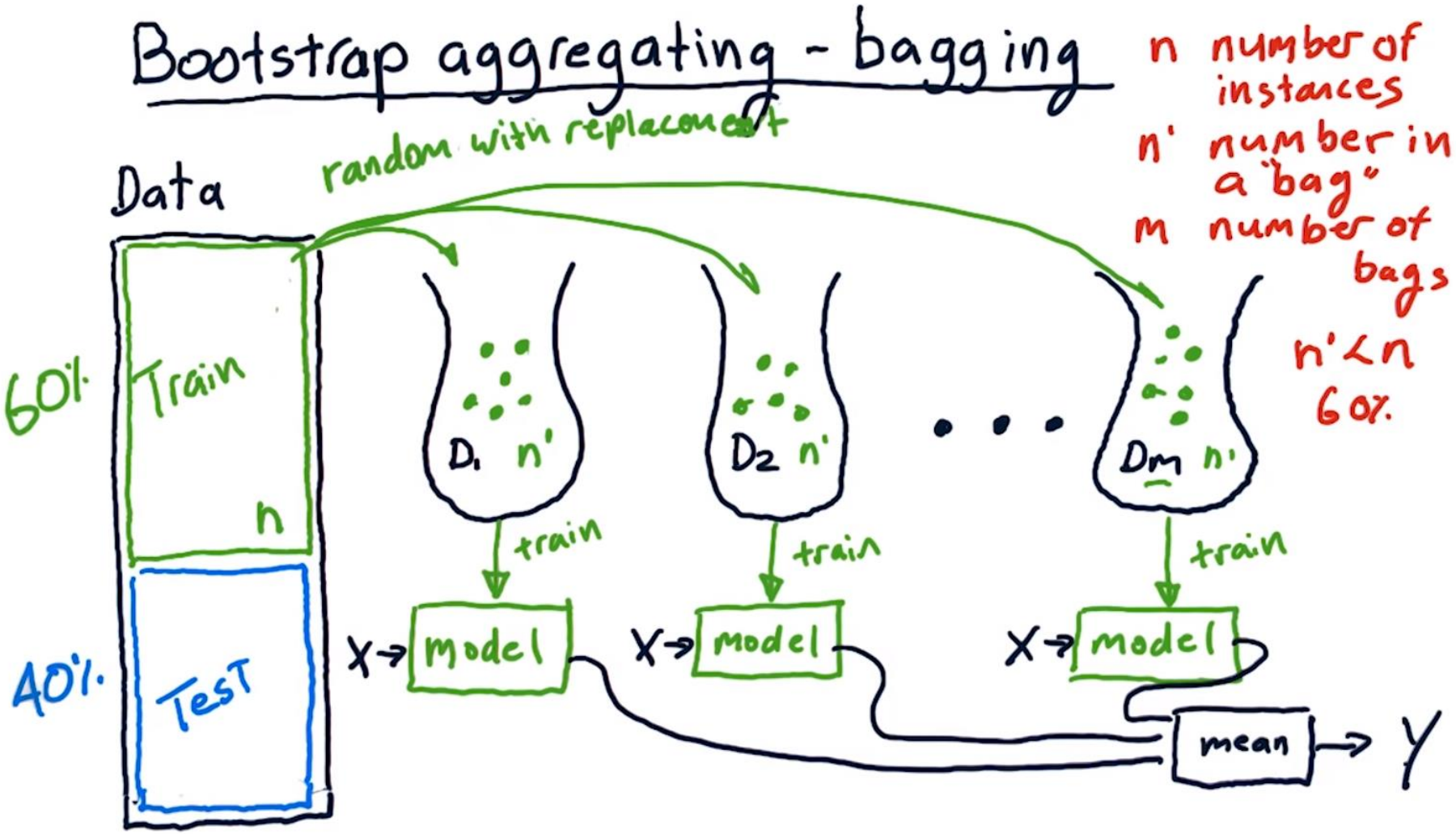
# Bagging

# Bagging - Training




https://youtu.be/2Mg8QD0F1dQ

# Bagging - Predicting

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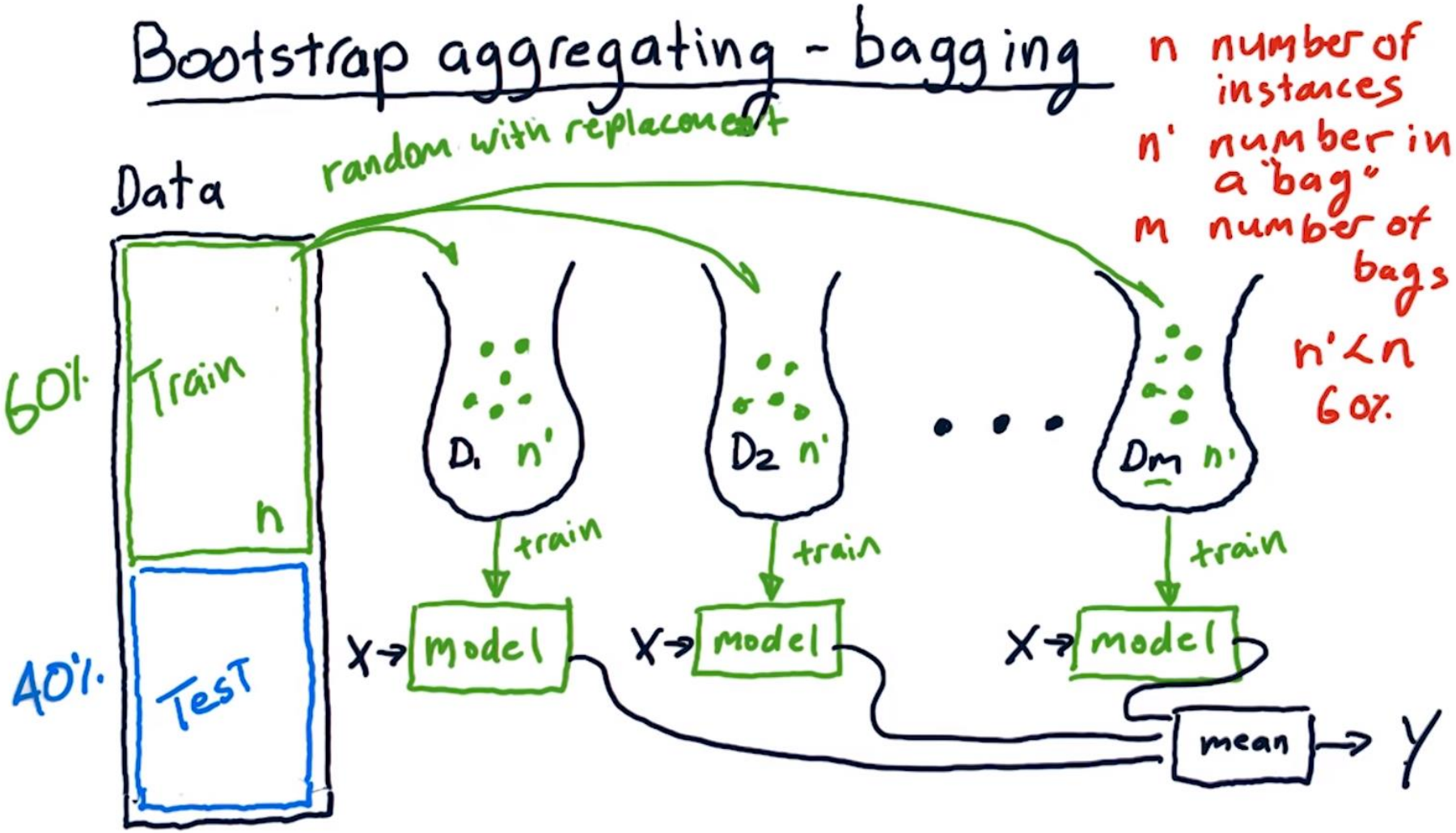
# Random Forest

# Random Forest

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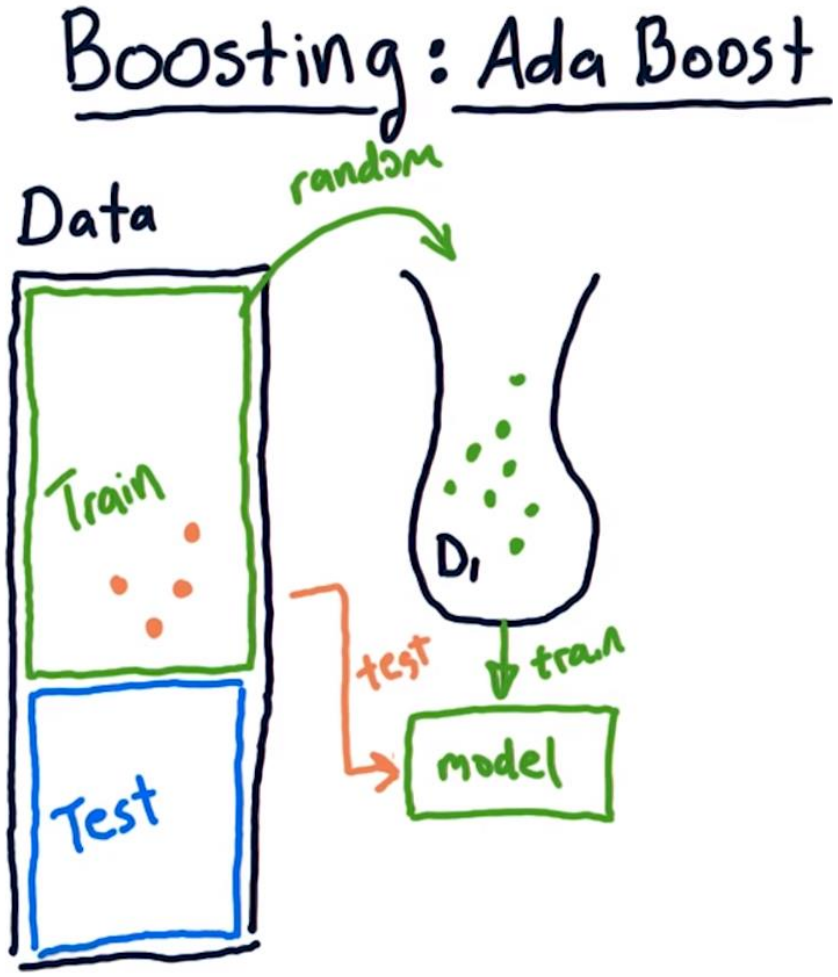
# Boosting

# Boosting - Training

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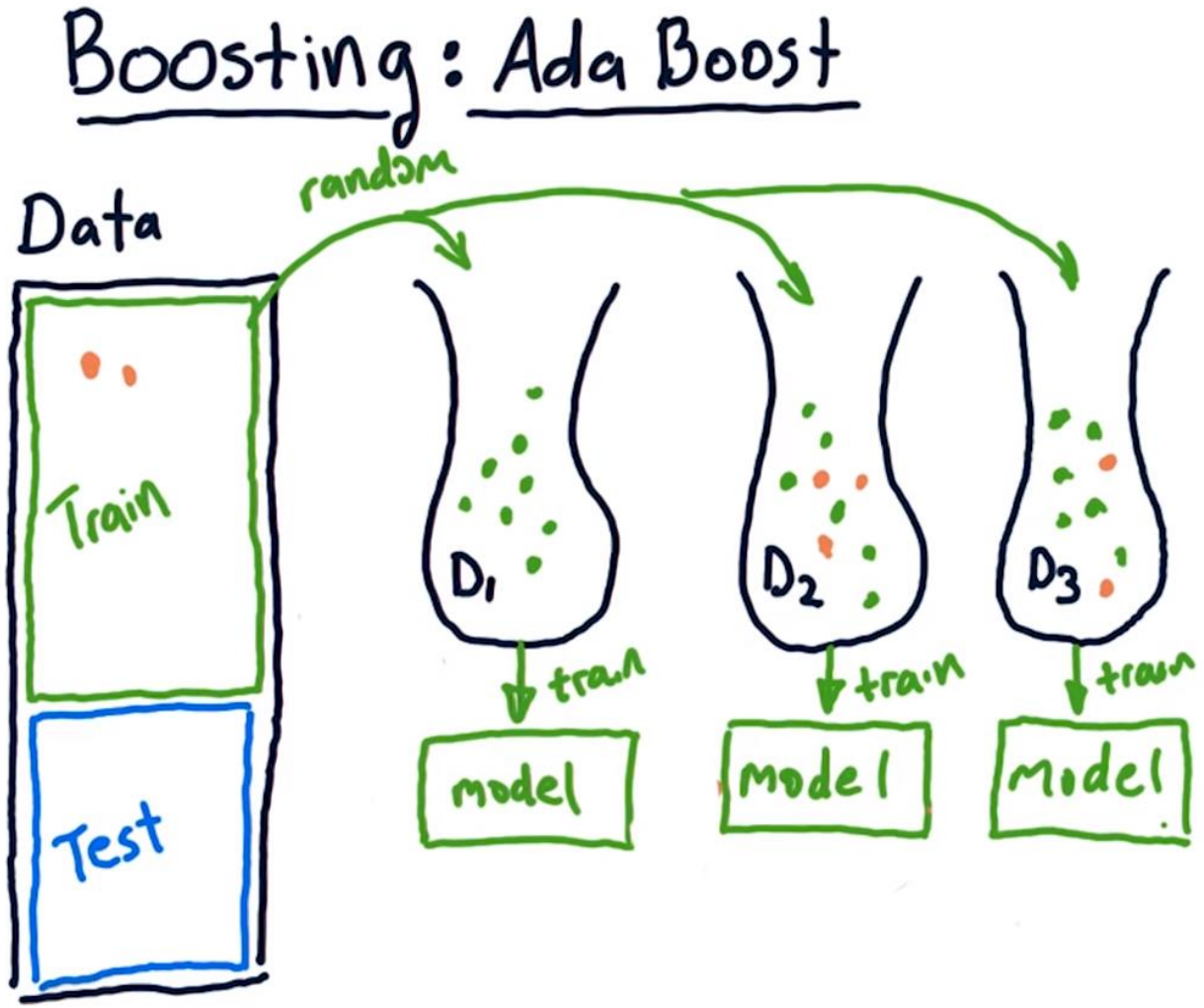
# Boosting - Training

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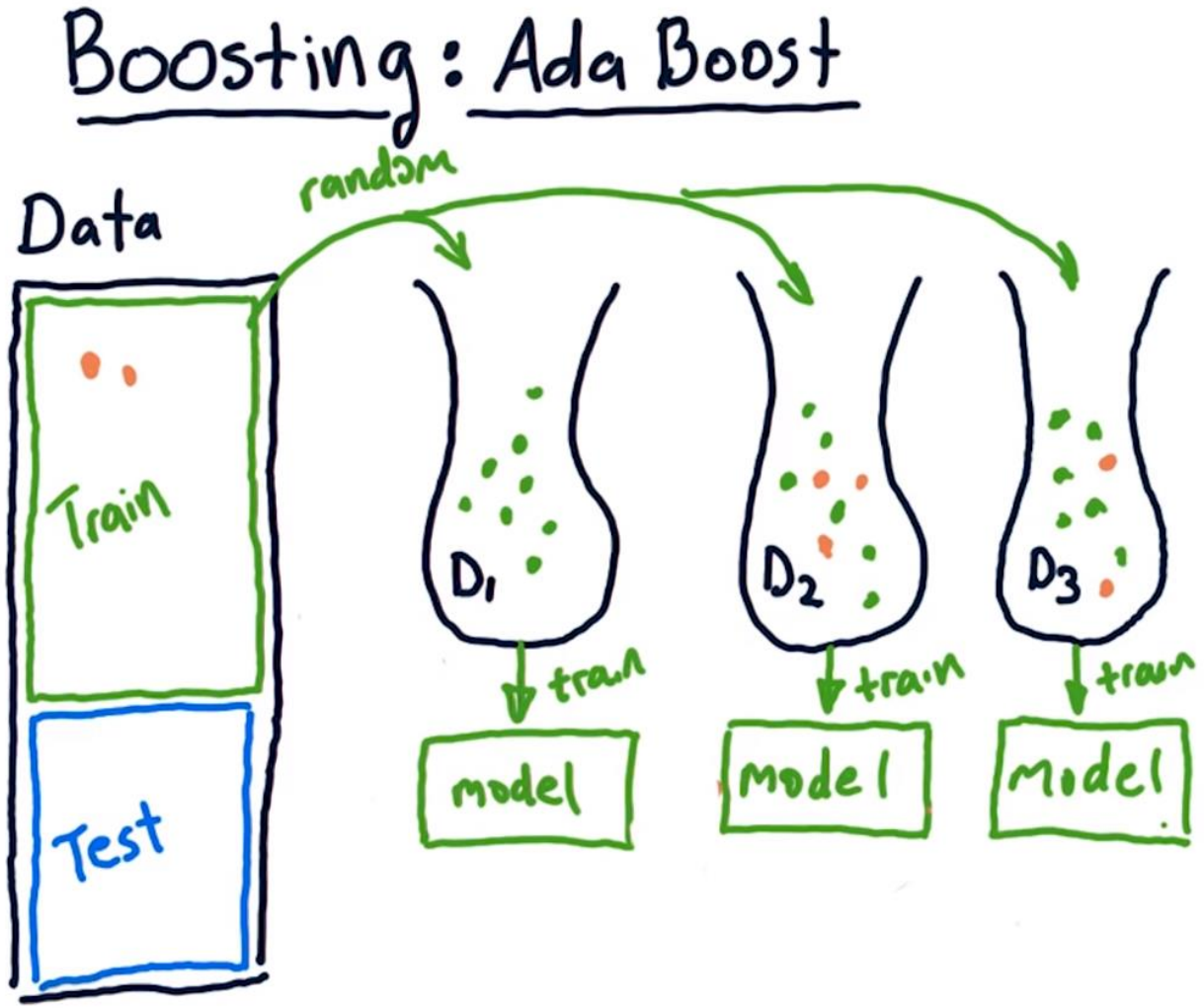
# Boosting - Predicting




https://youtu.be/GM3CDQfQ4sw

# My Notes

- **Bagging:**
  - Bootstrapping Aggregate
  - Bootstrap sampling
  - Parallel
- **Random Forest:**
  - Same as bagging but uses unpruned decision trees which uses a random subset of features at each split
- **Boosting:**
  - Parallel instead of sequential
  - Each model takes into consideration the previous model mistakes
  - An ensemble of weak learners
  - Models get more say in the final classification than others based on the total error
  - Risks overfitting (because focus on incorrectly predicted samples)
  - Good for hard border examples (because focus on incorrectly predicted samples)