CIS 635 Knowledge Discovery & Data Mining

ML Models: Ensemble Learning

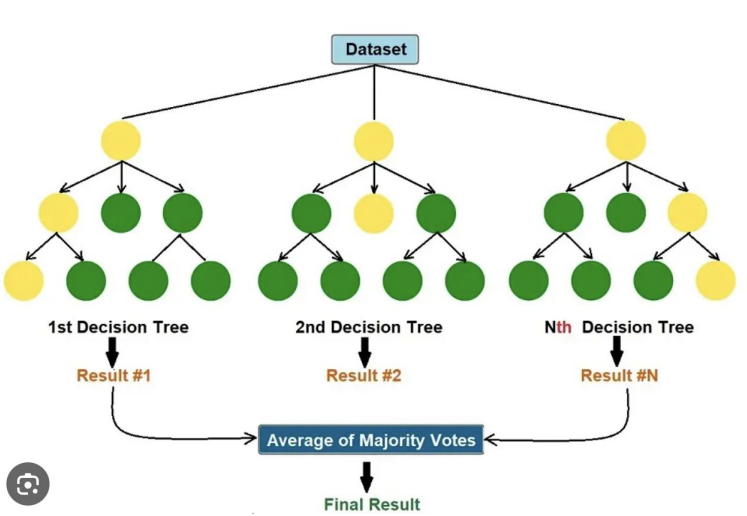
Ensemble Learning/Meta Learning

Ensemble Learning/Meta Learning

- Ensemble (more than one model)
  - Bagging
    - Averaging (RF)
    - Reduces Variance
  - Boosting
    - Gradual improvement over weak learners (Adaboost/XGBoost)
    - Reduces Bias??

Random Forest

- Instead of one, we have many (but finite) Trees



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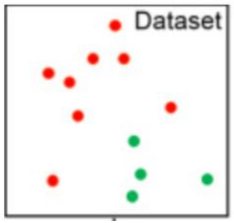
Boosting

- Combination of some weak models
- Power of many



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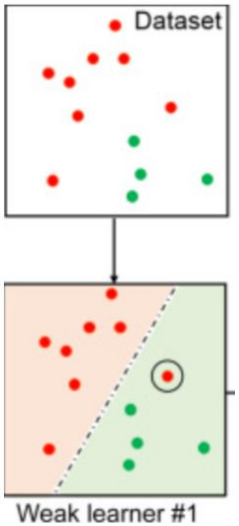
Boosting



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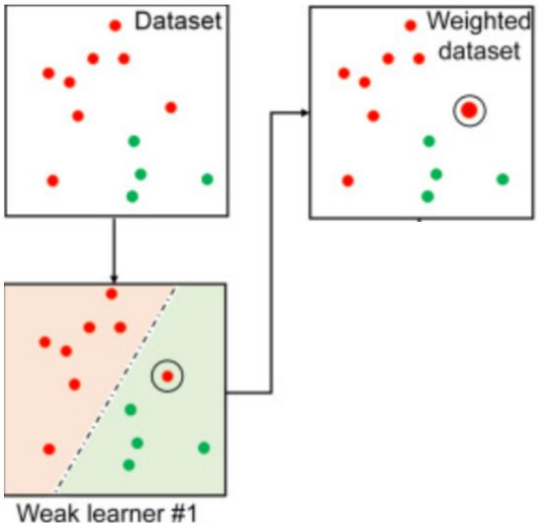
Boosting



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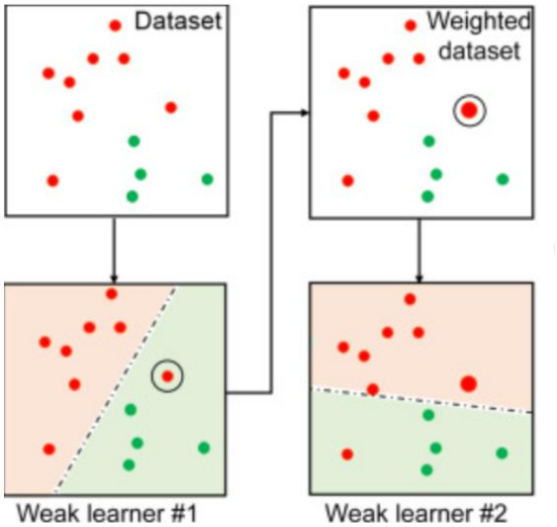
Boosting



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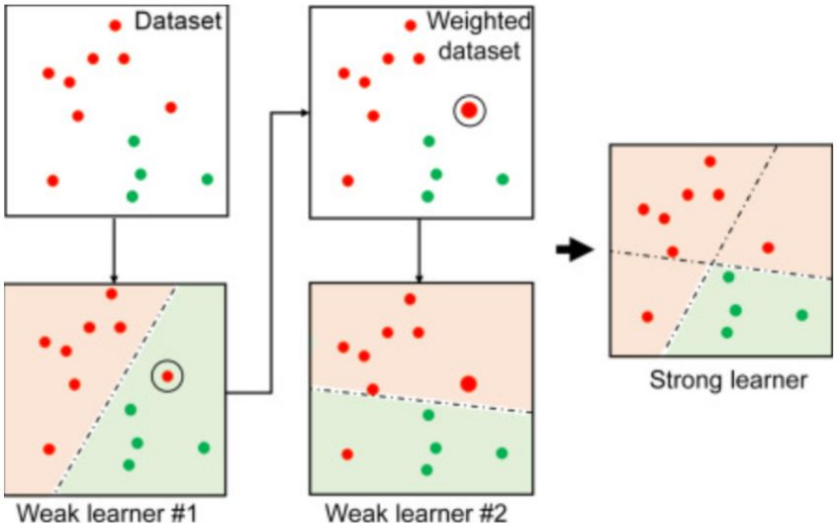

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Boosting

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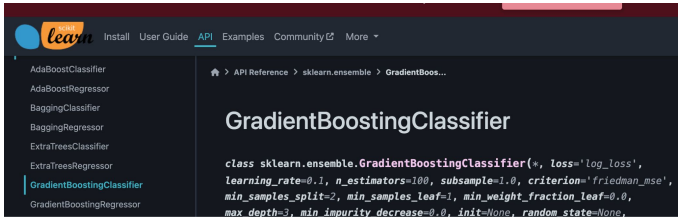

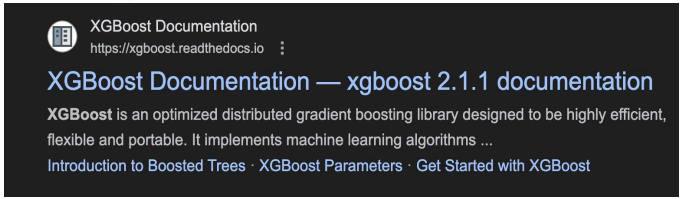

Notebook extension/presentation

- See notebooks section (Blackboard)