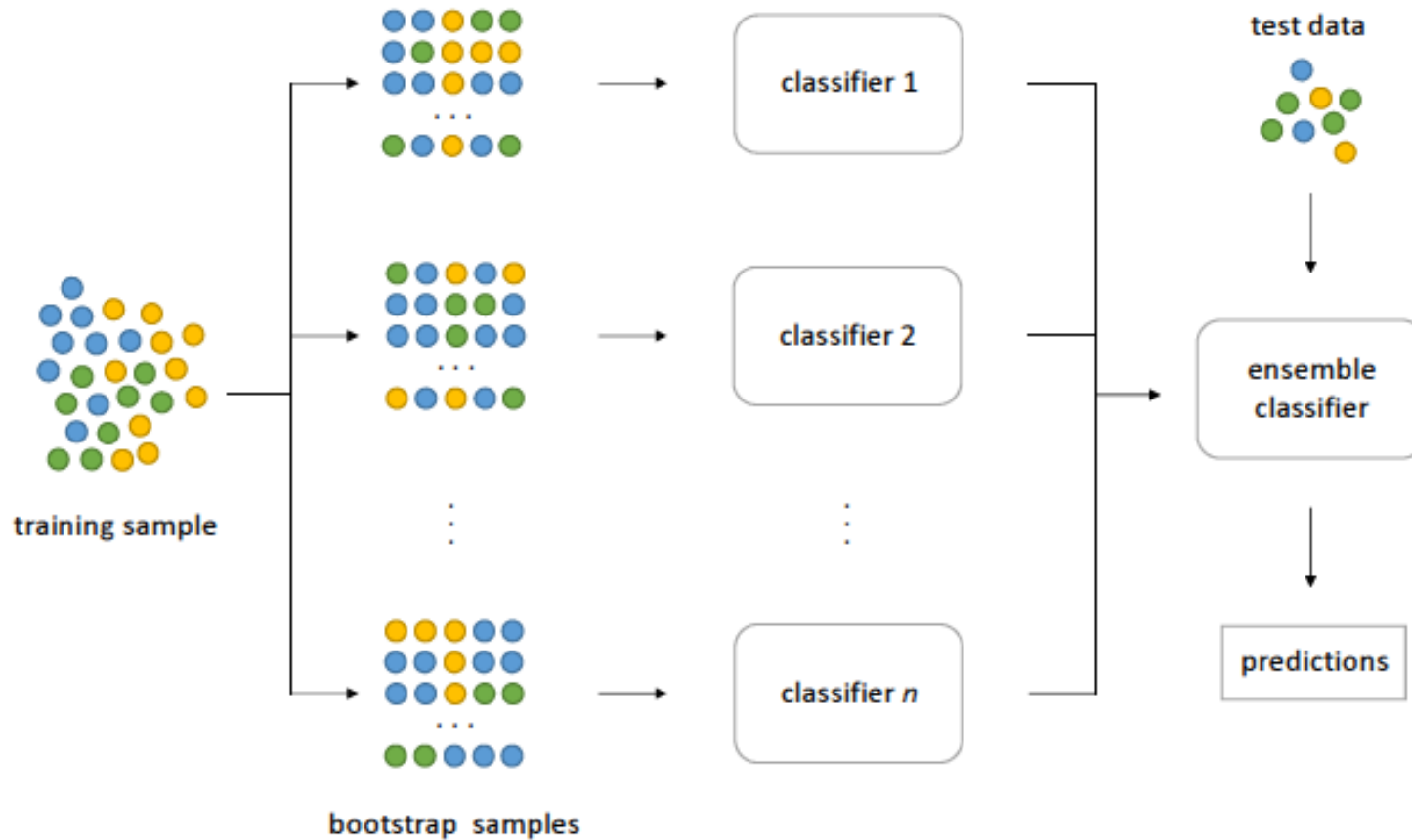




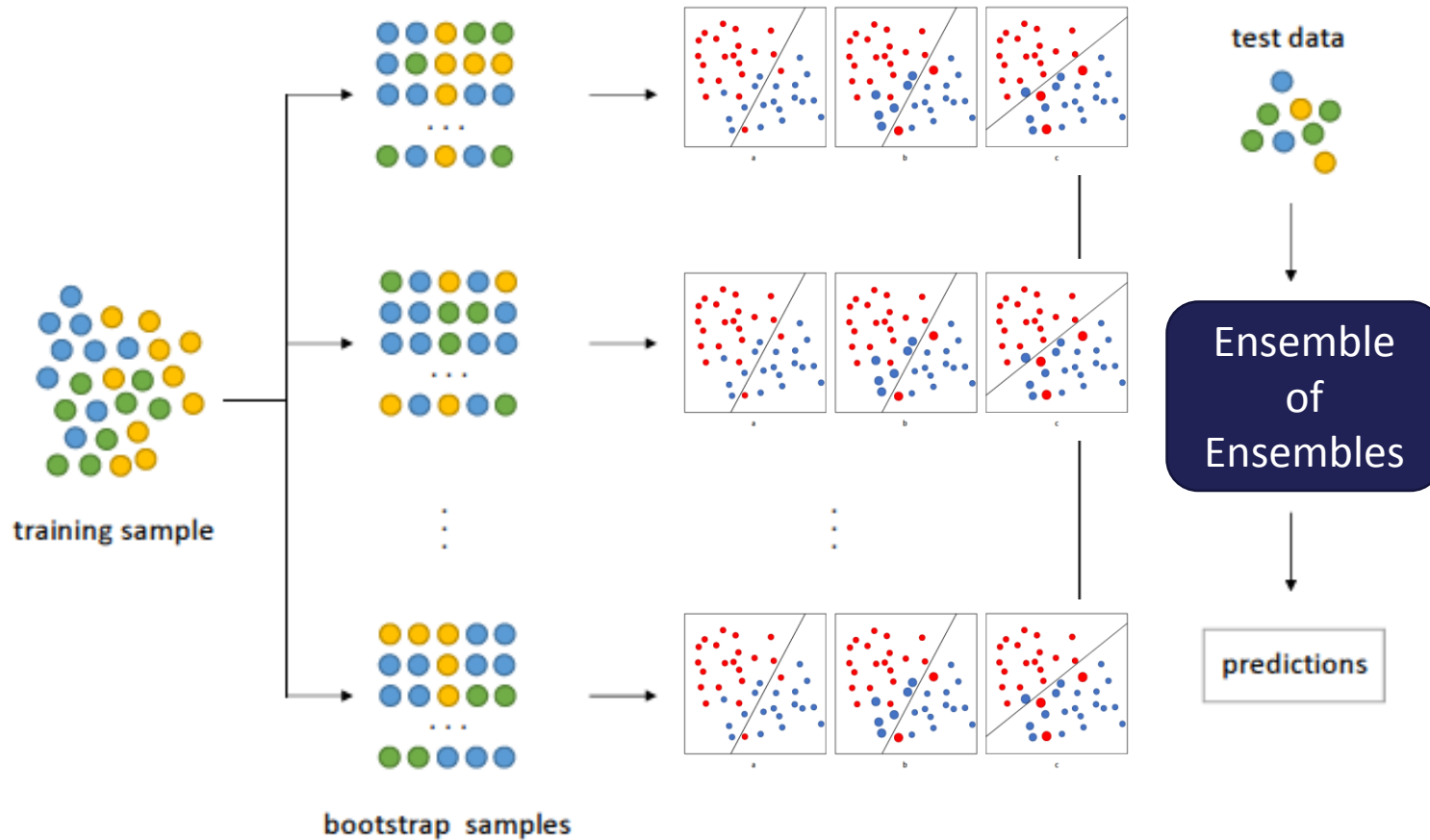
Bagging + Boosting + Data Pre-Processing

Bagging



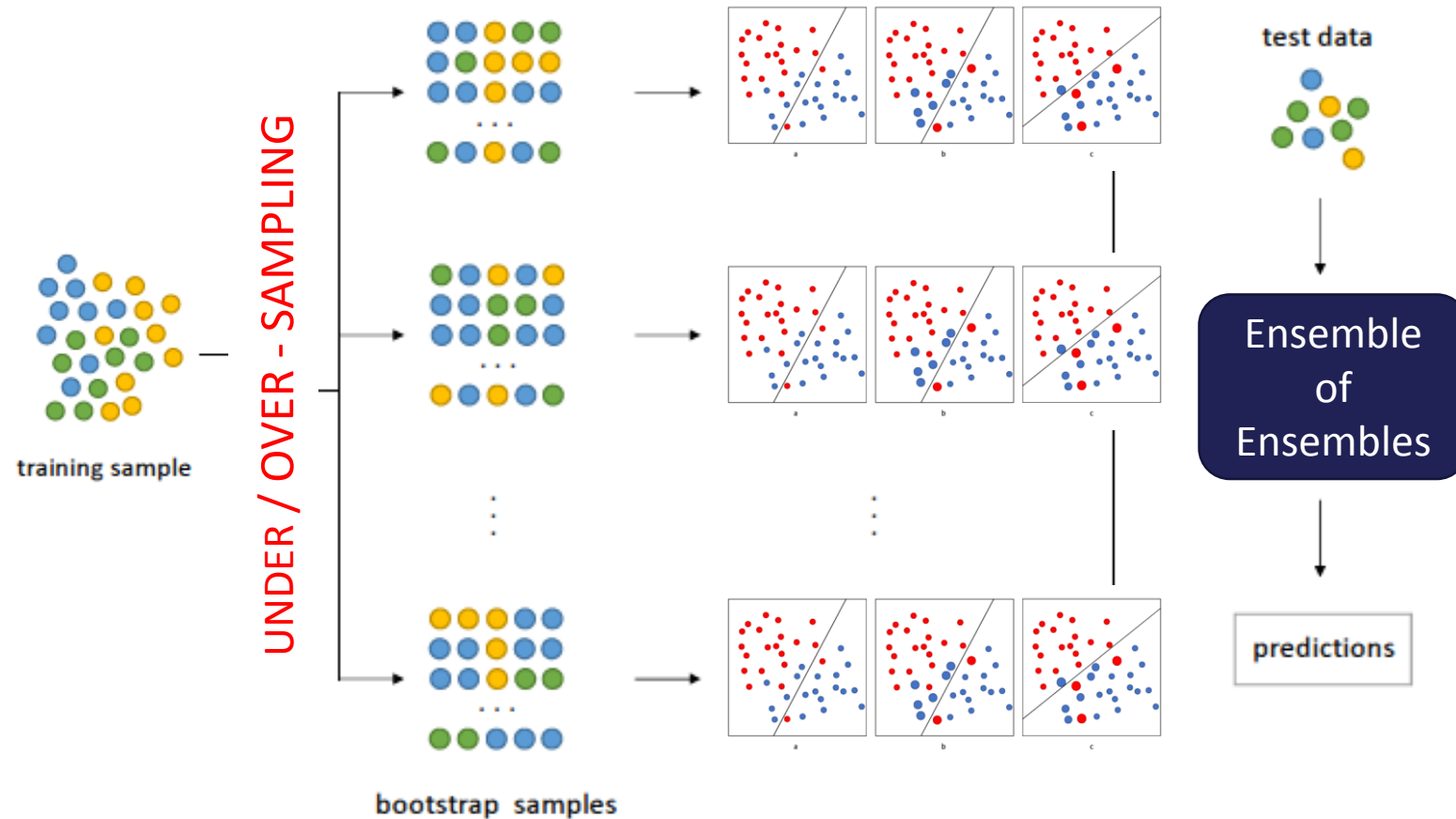
- A classifier is trained on each bag

Bagging + Boosting



- **AdaBoost** is trained on each bag

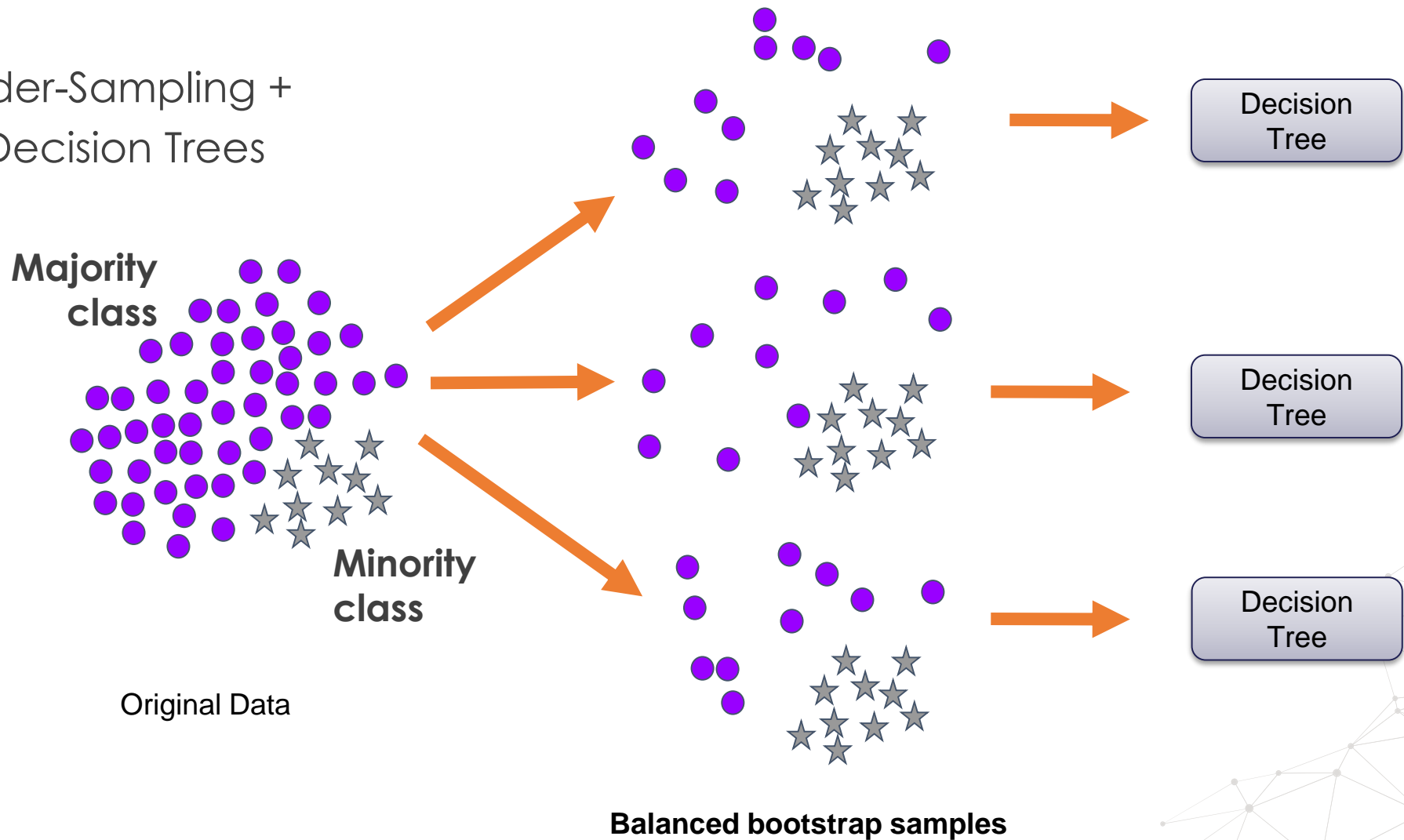
Bagging + Boosting + Re-Sampling



- **AdaBoost** is trained on each bag
- Bags are created with random under-sampling

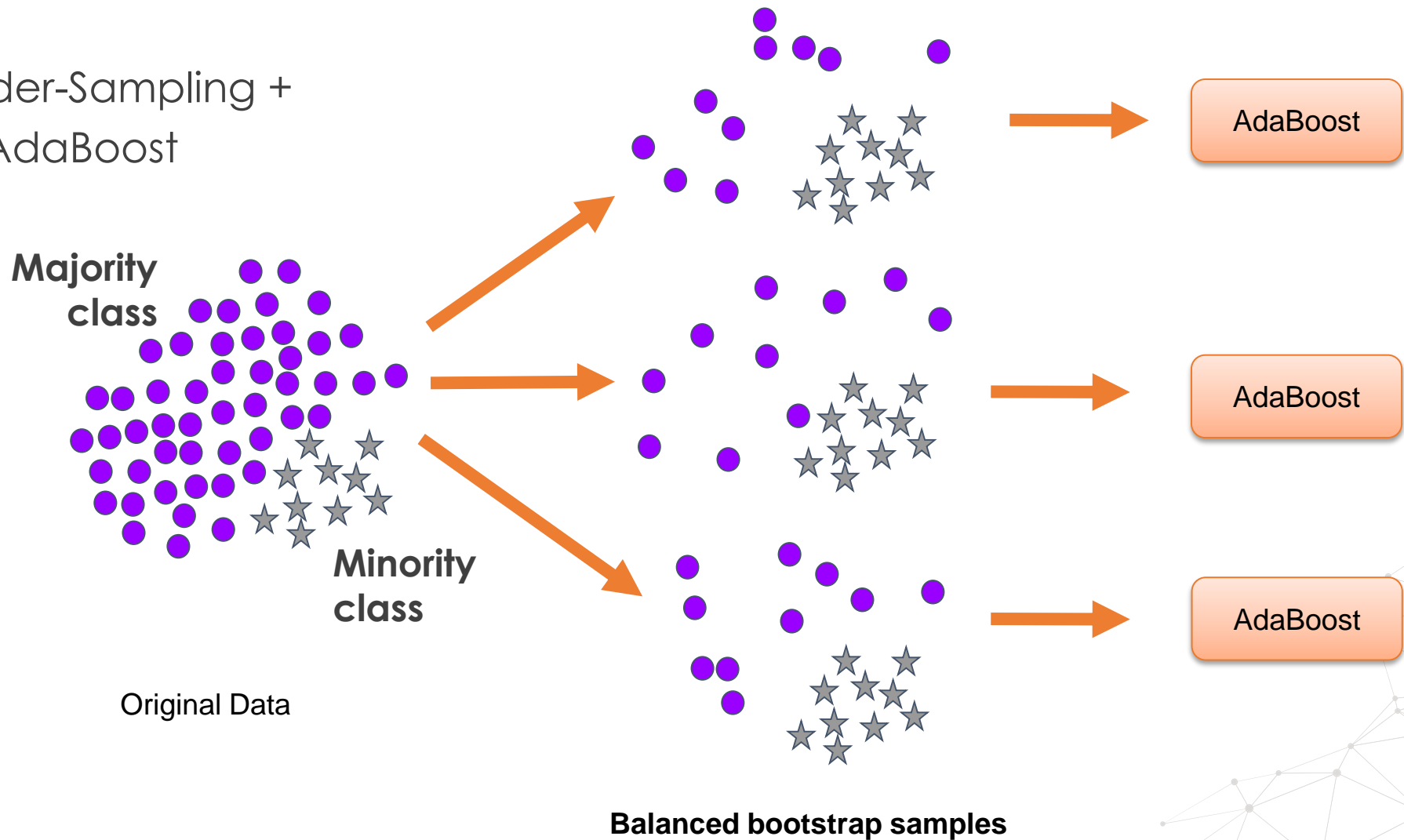
Balanced Random Forests

Random Under-Sampling +
Bagging of Decision Trees



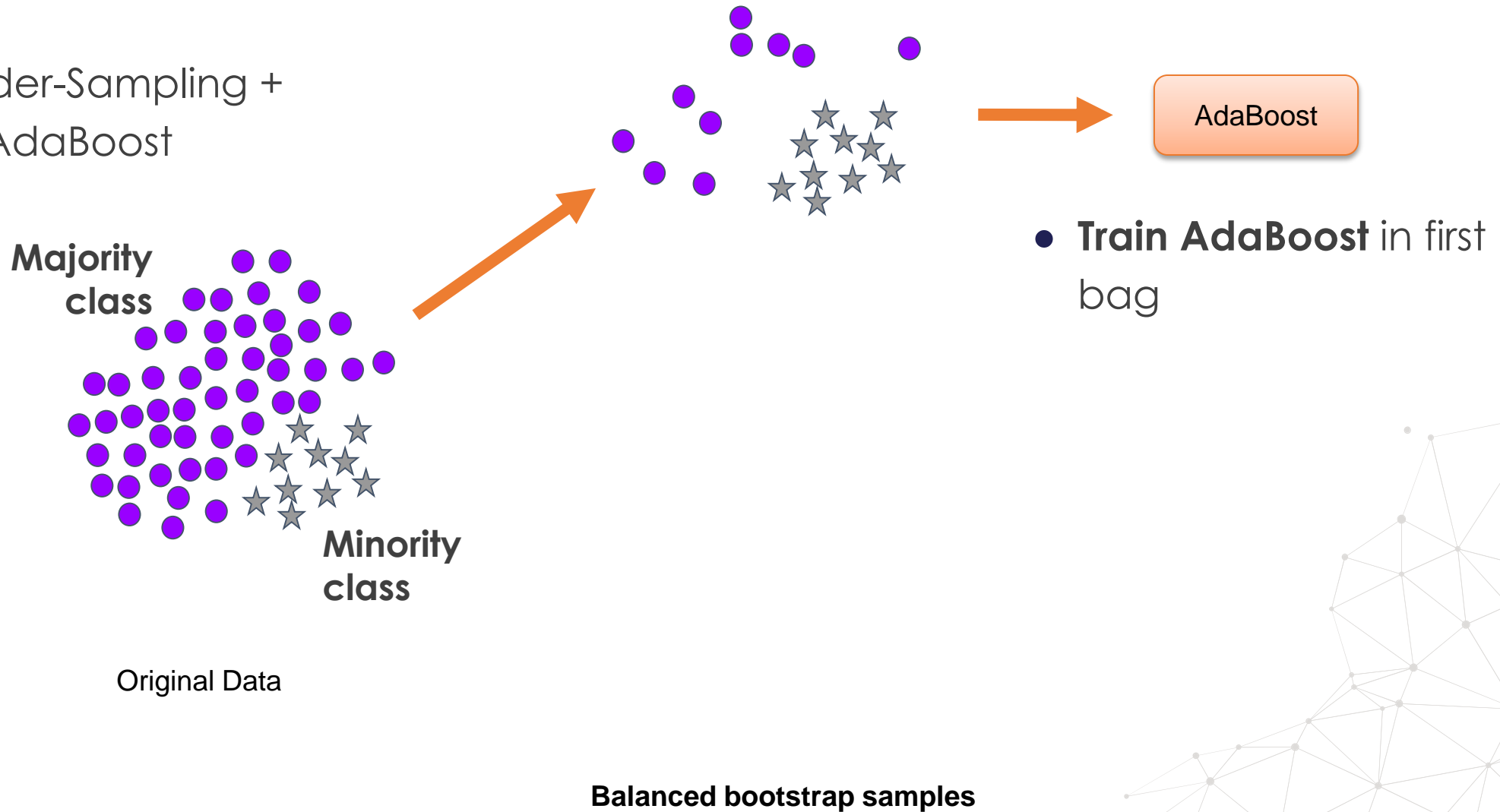
EasyEnsemble

Random Under-Sampling +
Bagging of AdaBoost



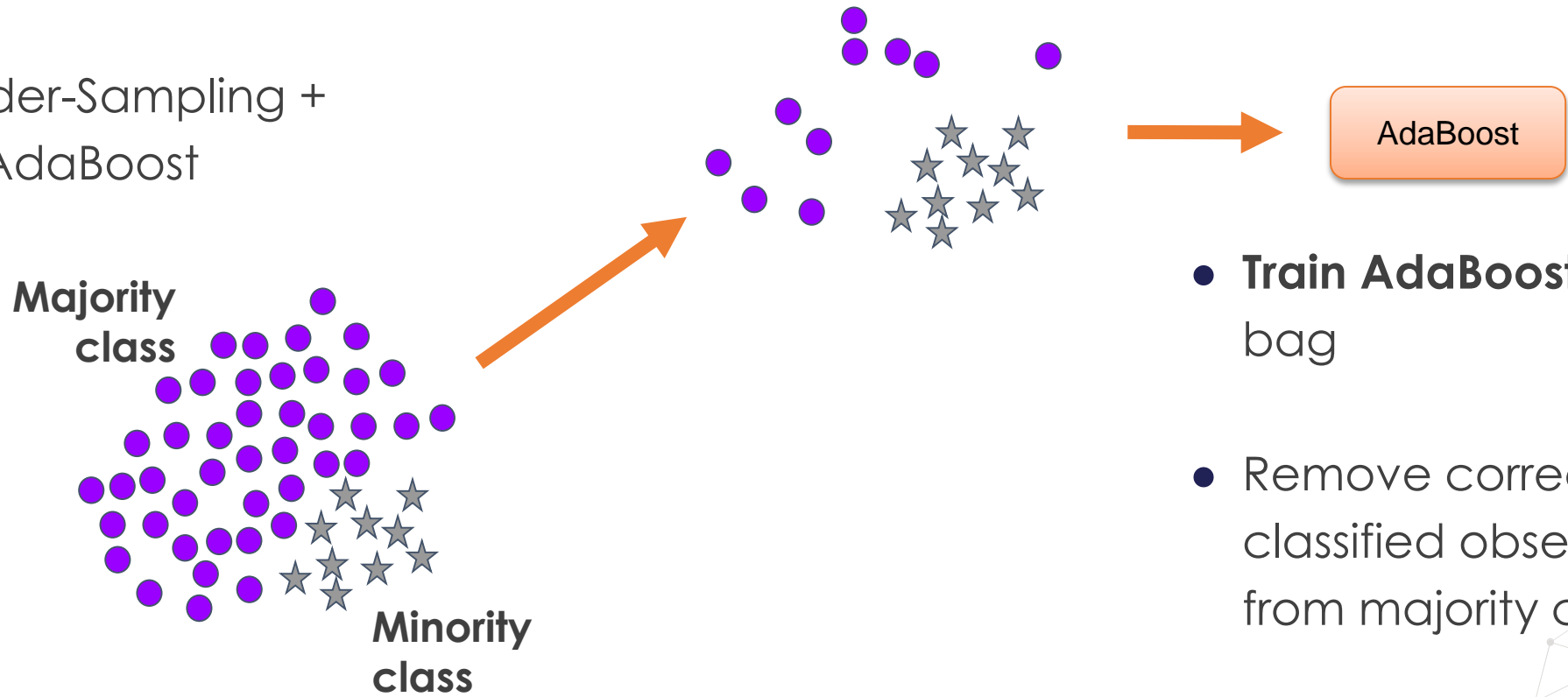
BalanceCascade

Random Under-Sampling +
Bagging of AdaBoost



BalanceCascade

Random Under-Sampling +
Bagging of AdaBoost



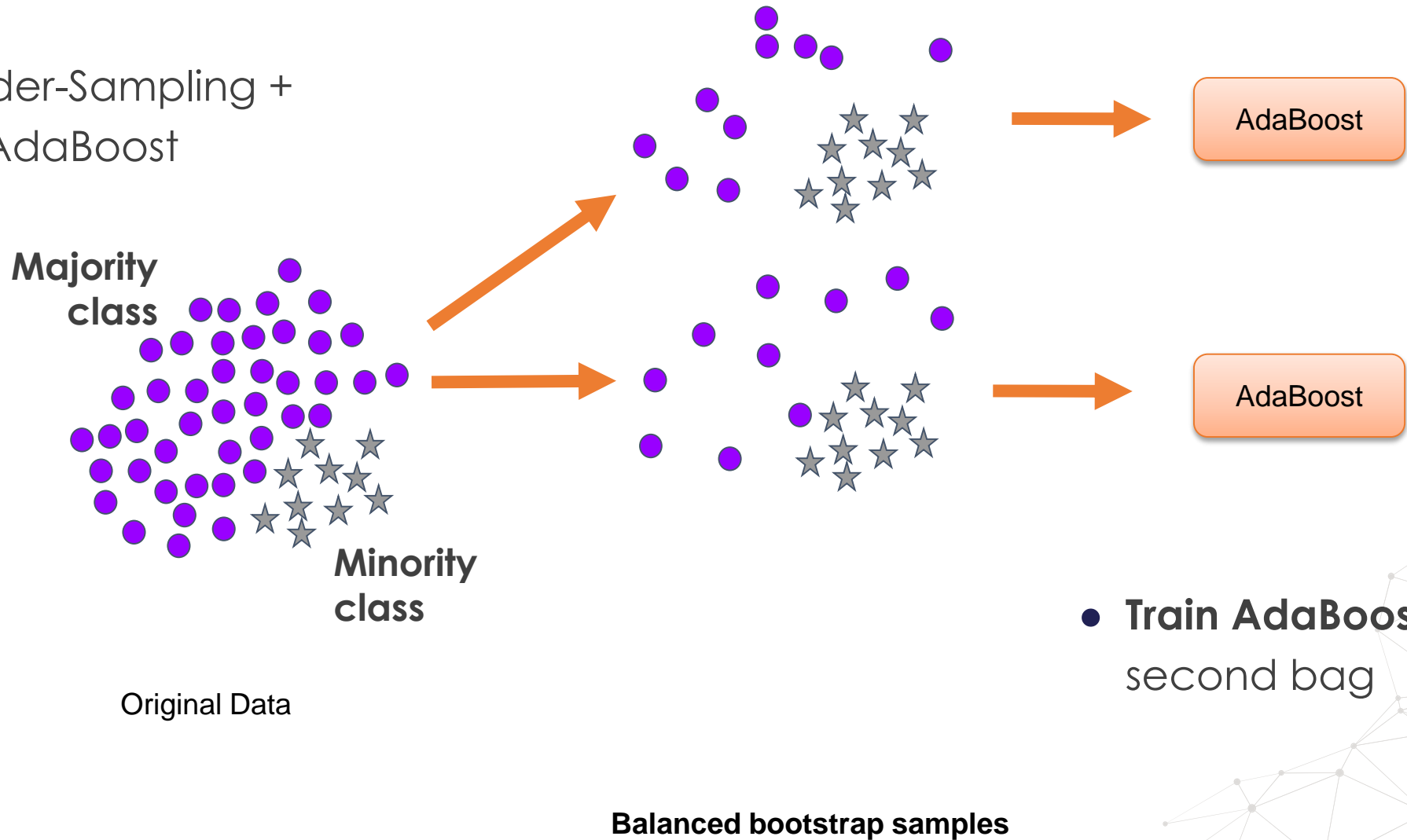
- **Train AdaBoost** in first bag
- Remove correctly classified observations from majority class

Original Data

Balanced bootstrap samples

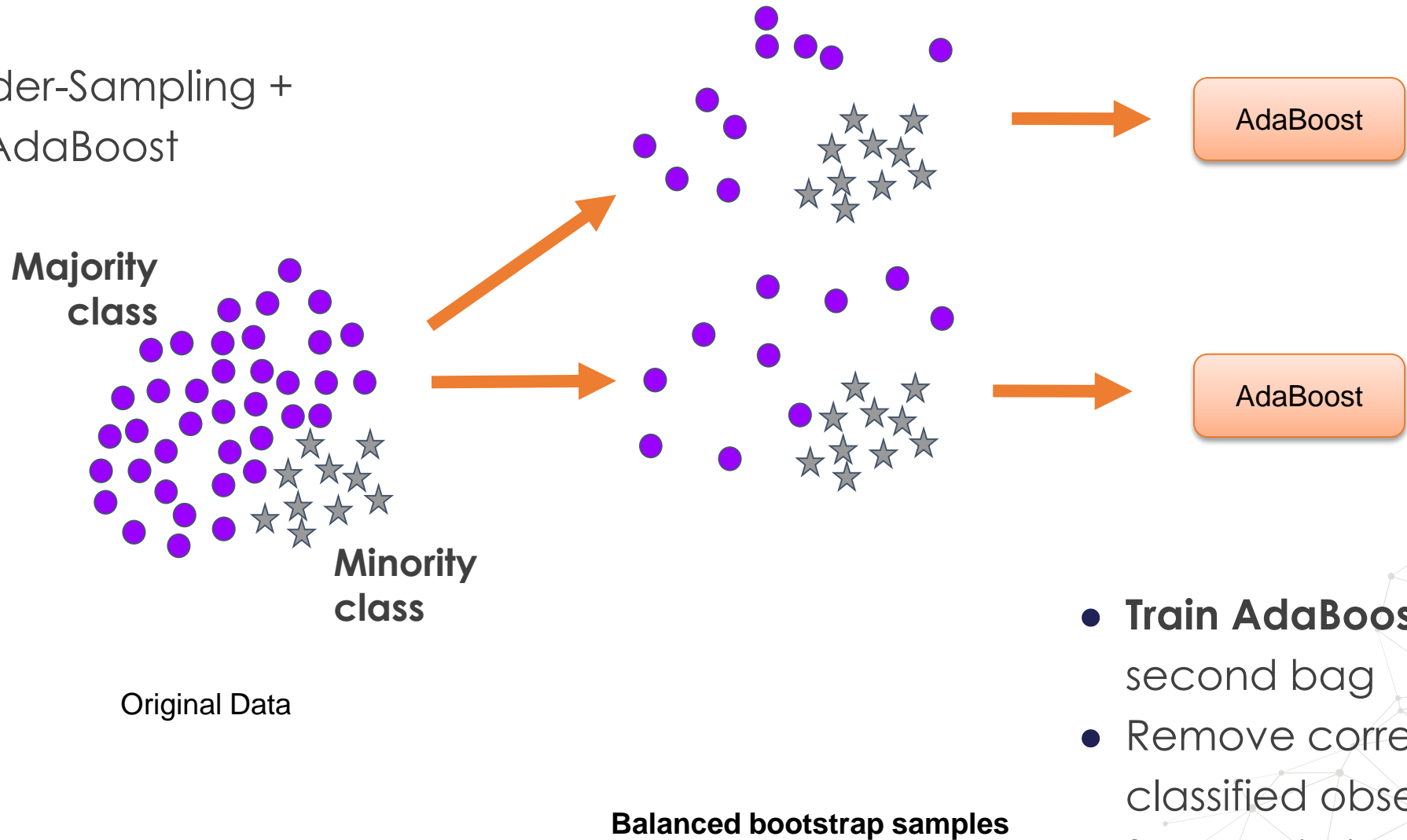
BalanceCascade

Random Under-Sampling +
Bagging of AdaBoost



BalanceCascade

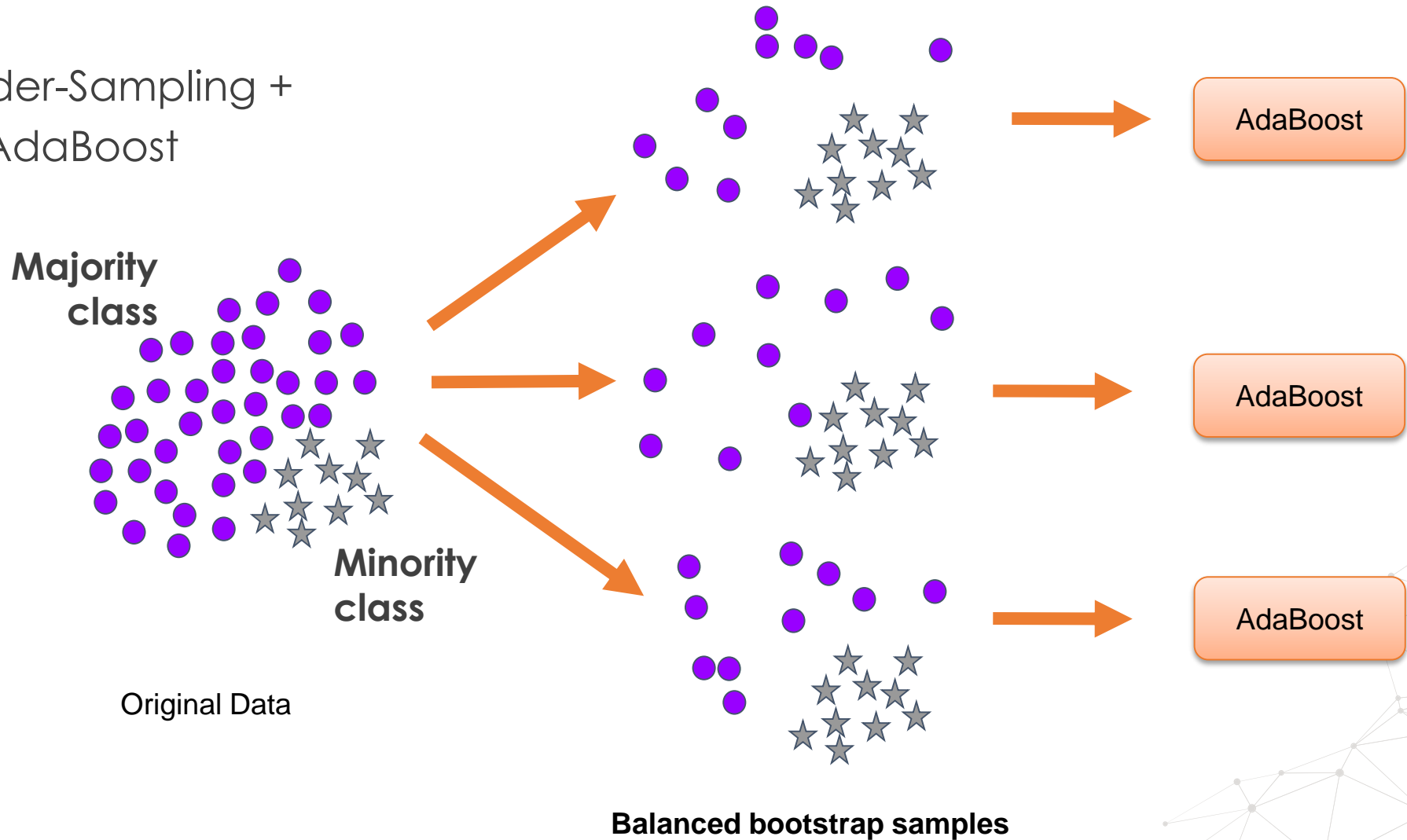
Random Under-Sampling +
Bagging of AdaBoost



- **Train AdaBoost** in second bag
- Remove correctly classified observations from majority class

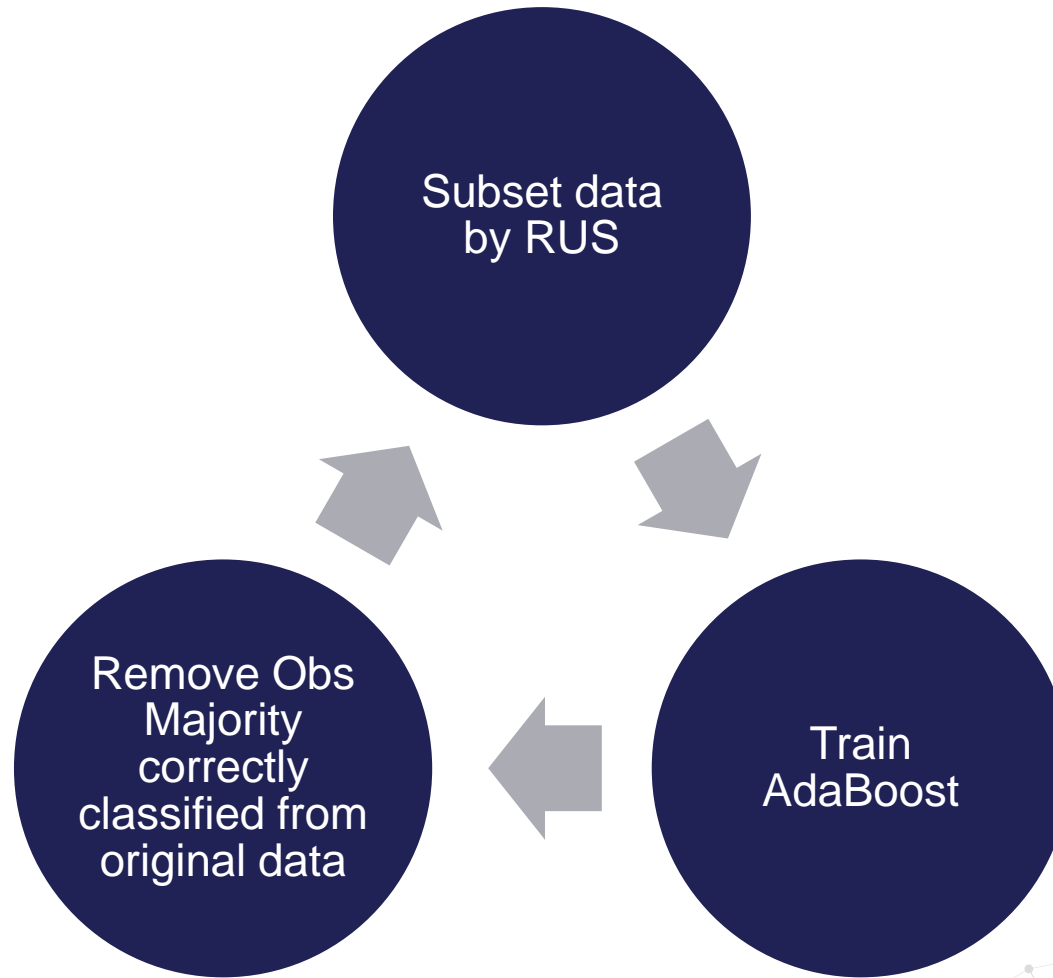
BalanceCascade

Random Under-Sampling +
Bagging of AdaBoost



BalanceCascade

Random Under-Sampling +
Bagging of AdaBoost



EasyEnsemble with Imbalanced Learn

Random Under-Sampling + bagging + Boosting

`imblearn.ensemble`: Ensemble methods

The `imblearn.ensemble` module include methods generating under-sampled subsets combined inside an ensemble.

`ensemble.EasyEnsembleClassifier` ([...])

Bag of balanced boosted learners also known as EasyEnsemble.

THANK YOU

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