A Scikit-Learn Workflow

1. Get data ready
2. Pick a model (to suit your problem)
3. Fit the model to the data and make a prediction
4. Evaluate the model
5. Improve through experimentation
6. Save and reload your trained model

RANDOM FOREST

simplilearn


Types of Machine Learning

Types of Machine Learning

Supervised Learning

Unsupervised Learning

Reinforcement Learning

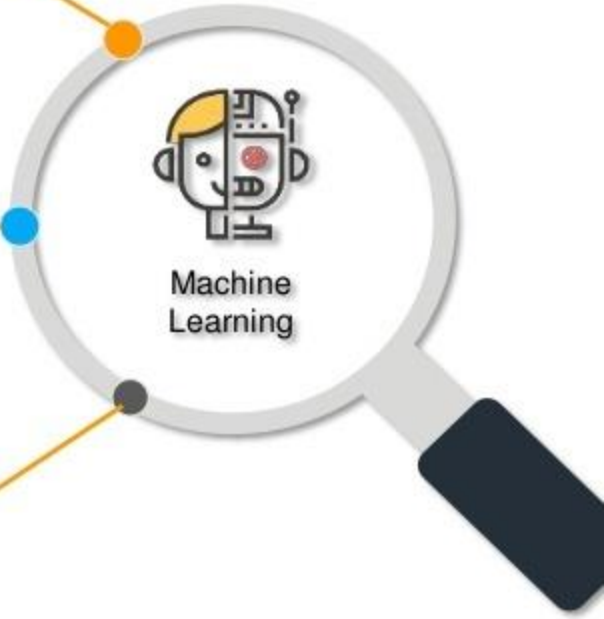
Machine Learning

Types of Machine Learning

Supervised Learning

Unsupervised Learning

Reinforcement Learning



Types of Supervised Learning

Supervised Learning

Unsupervised Learning

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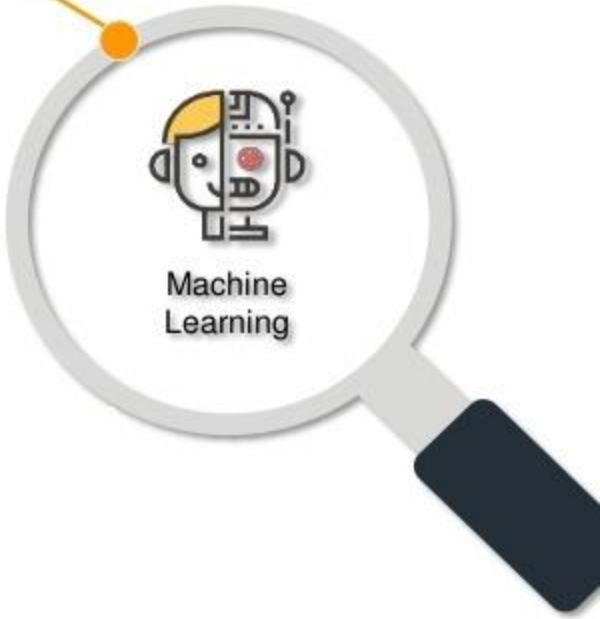
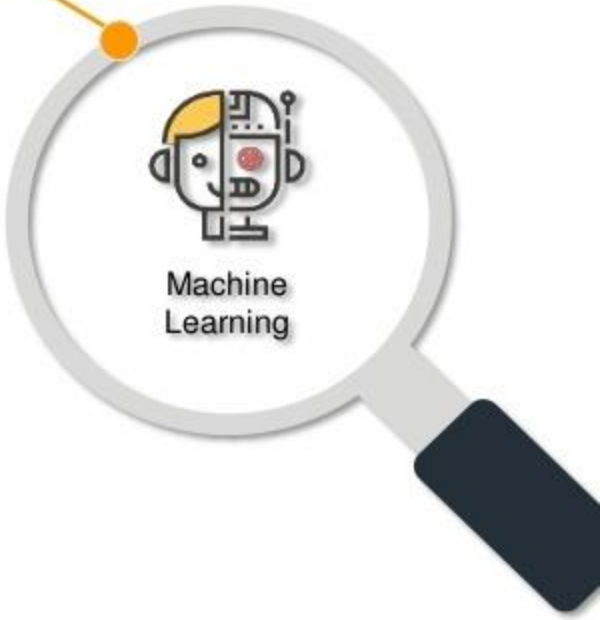


Types of Supervised Learning

Supervised Learning

Classification

Regression

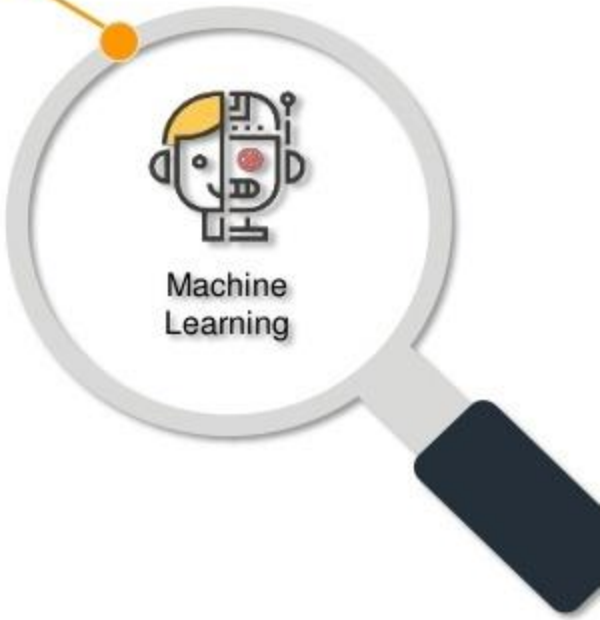


What is Classification?

Supervised Learning

Classification

Regression

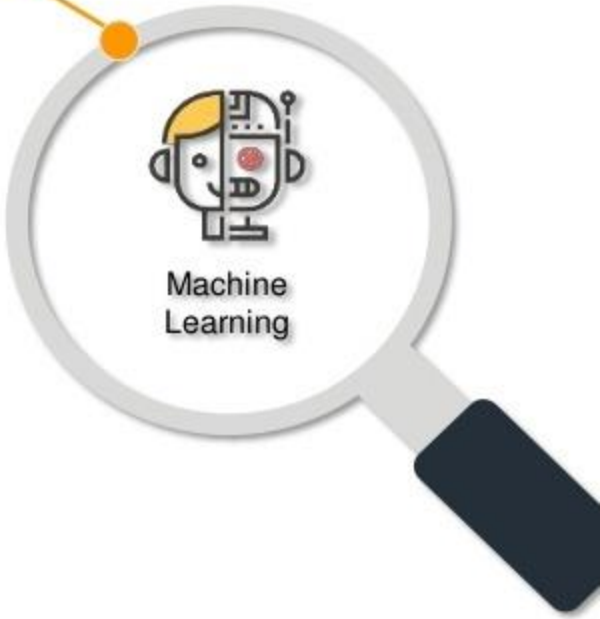


What is Classification?

Supervised Learning

Classification

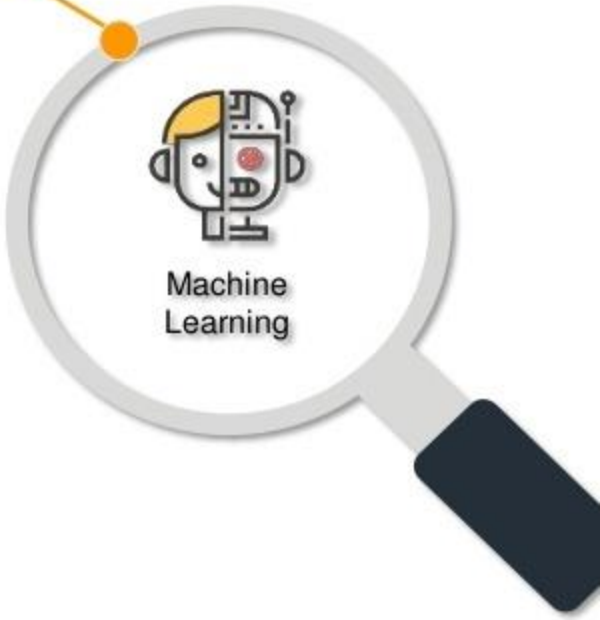
Classification is a kind of problem wherein the outputs are categorical in nature like 'Yes' or 'No', 'True' or 'False', '0' or '1'



Solutions under Classification

Supervised Learning

Classification



Solutions under Classification

Supervised Learning

KNN

Classification

Machine Learning

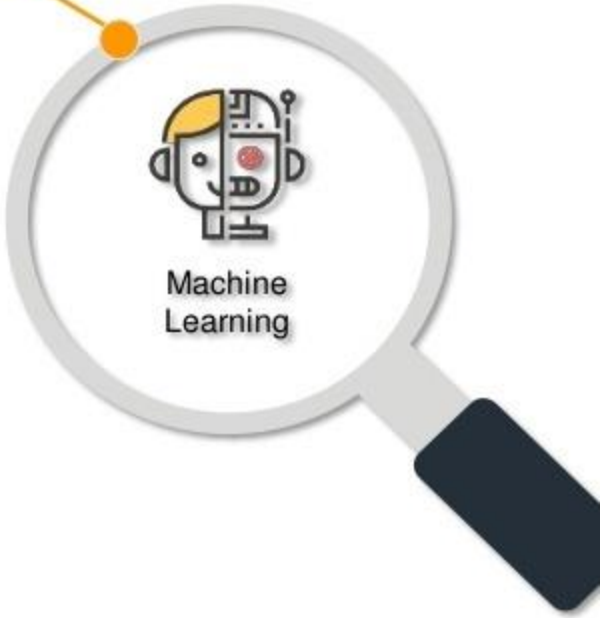
Solutions under Classification

Supervised Learning

KNN

Naïve Bayes

Classification



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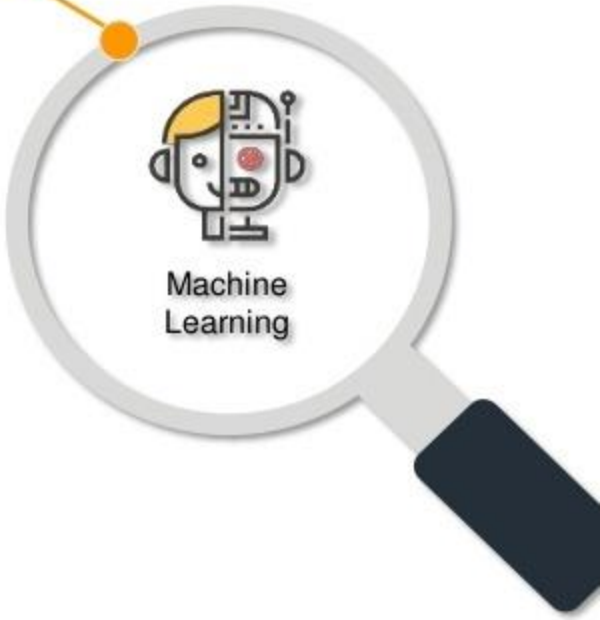
Decision Tree



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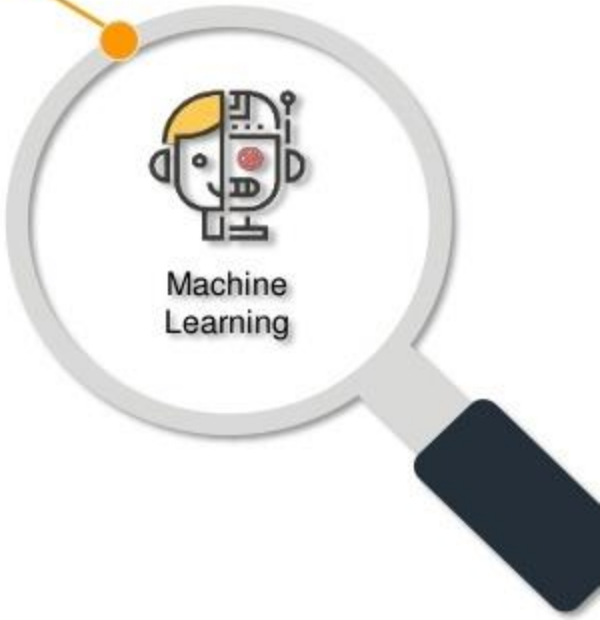
Random Forest



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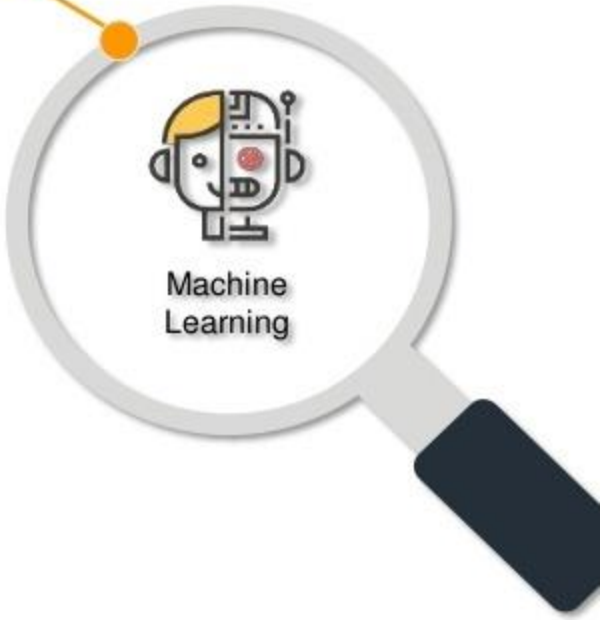


Why Random Forest?

Why Random Forest?

No overfitting

Use of multiple trees reduce the risk of overfitting

Training time is less

High accuracy

Runs efficiently on large database

For large data, it produces highly accurate predictions

Estimates missing data

Random Forest can maintain accuracy when a large proportion of data is missing


What is Random Forest?

What is Random Forest?

Random forest or Random Decision Forest is a method that operates by constructing multiple Decision Trees during training phase.

The Decision of the majority of the trees is chosen by the random forest as the final decision

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Decision Tree 1

Output 1

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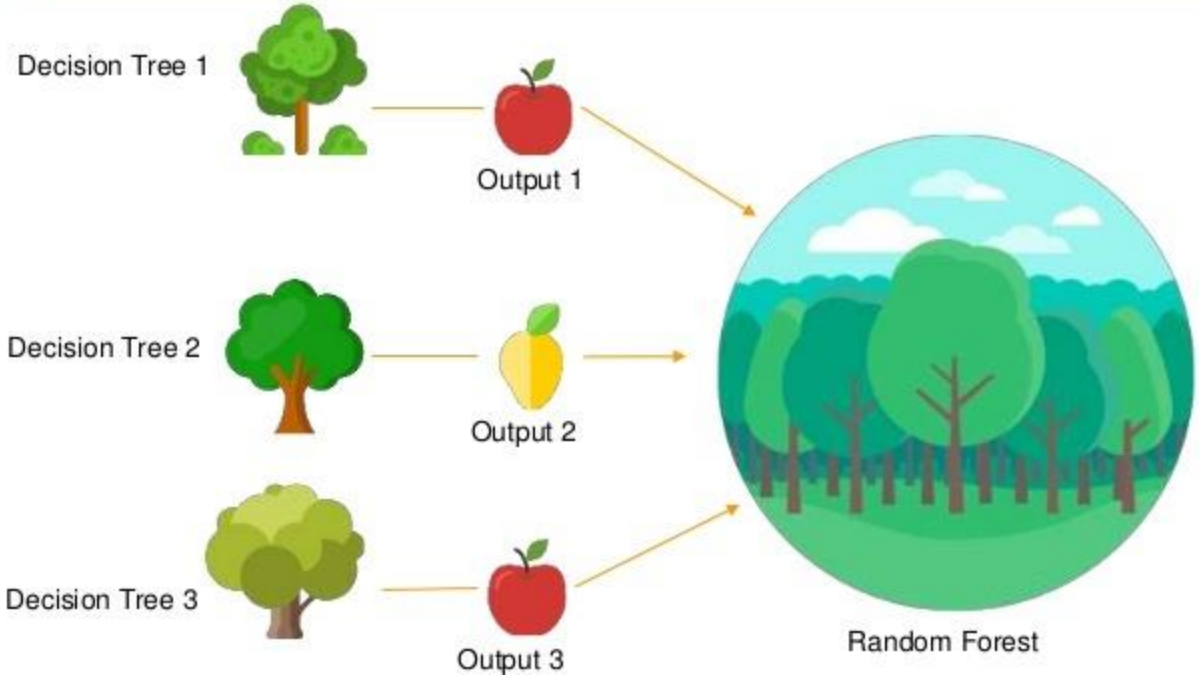

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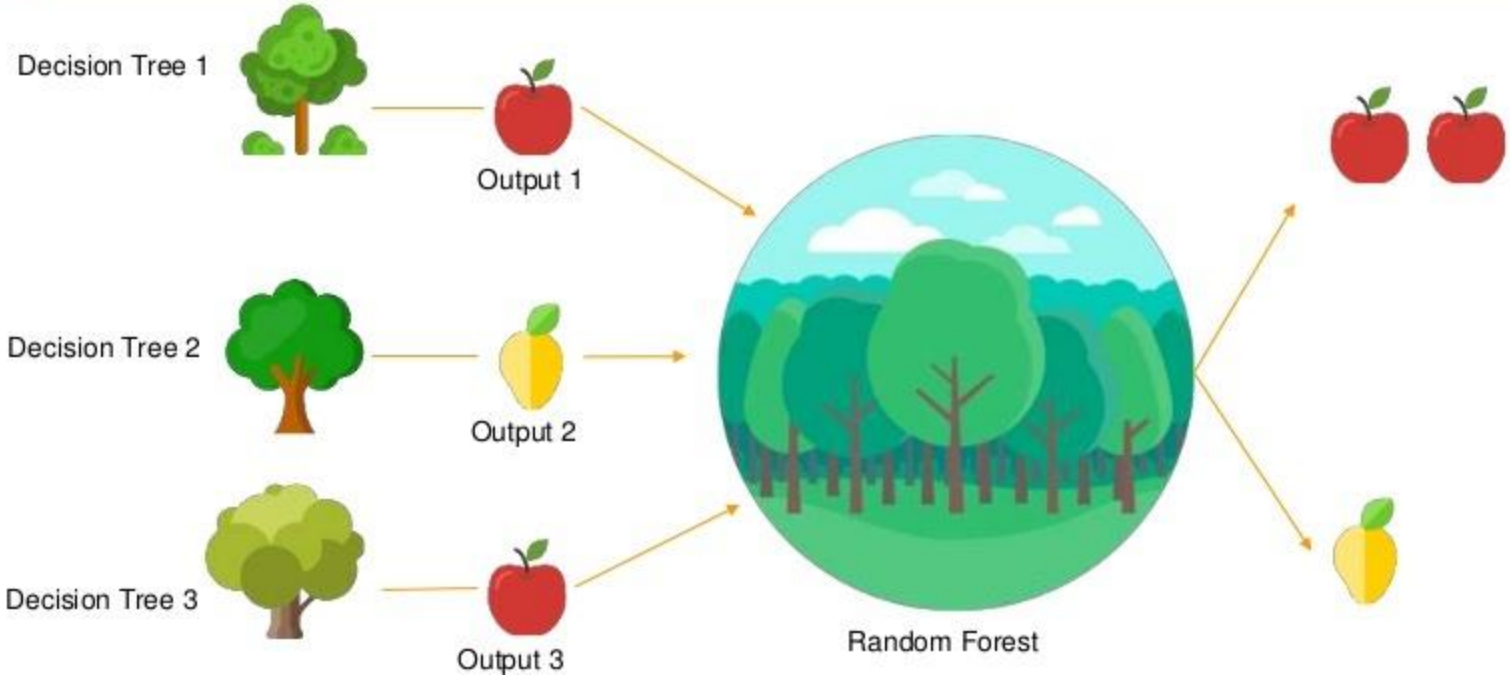

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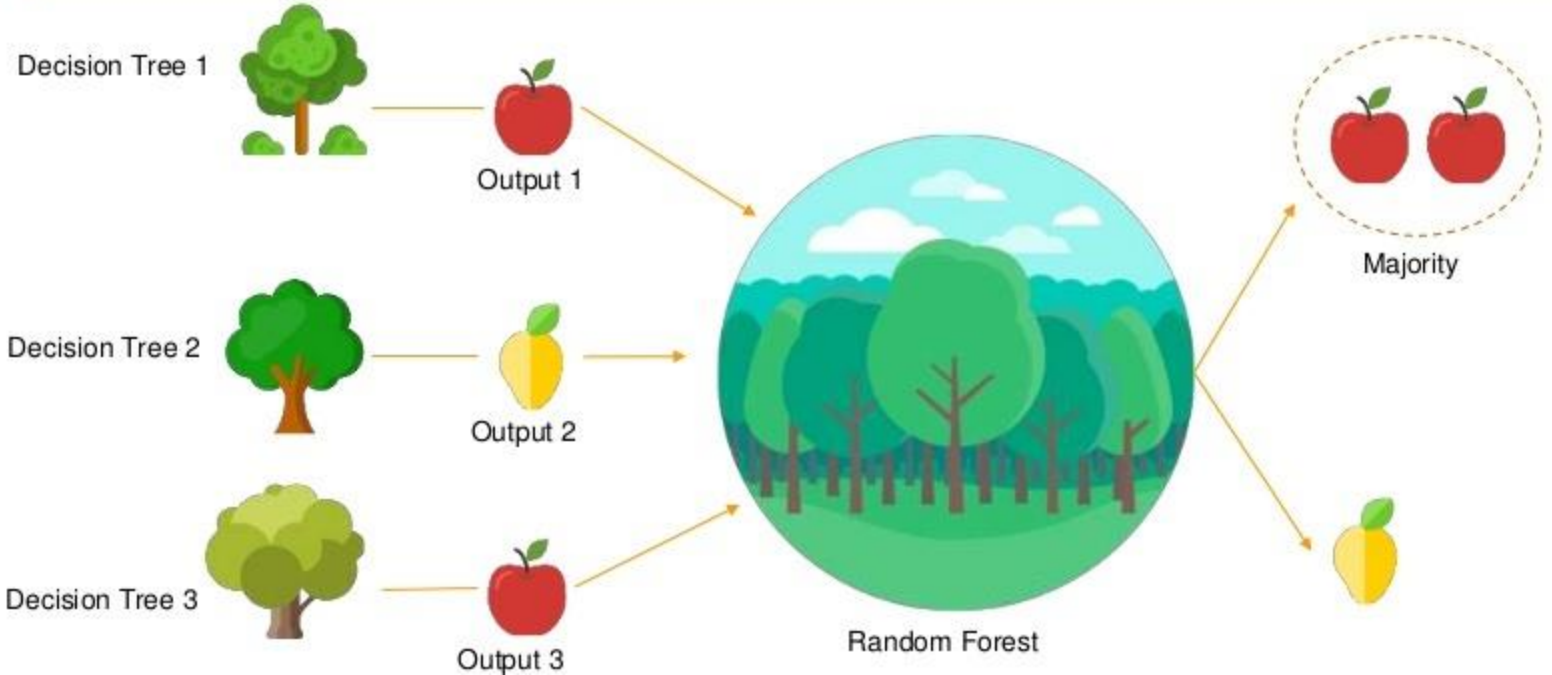

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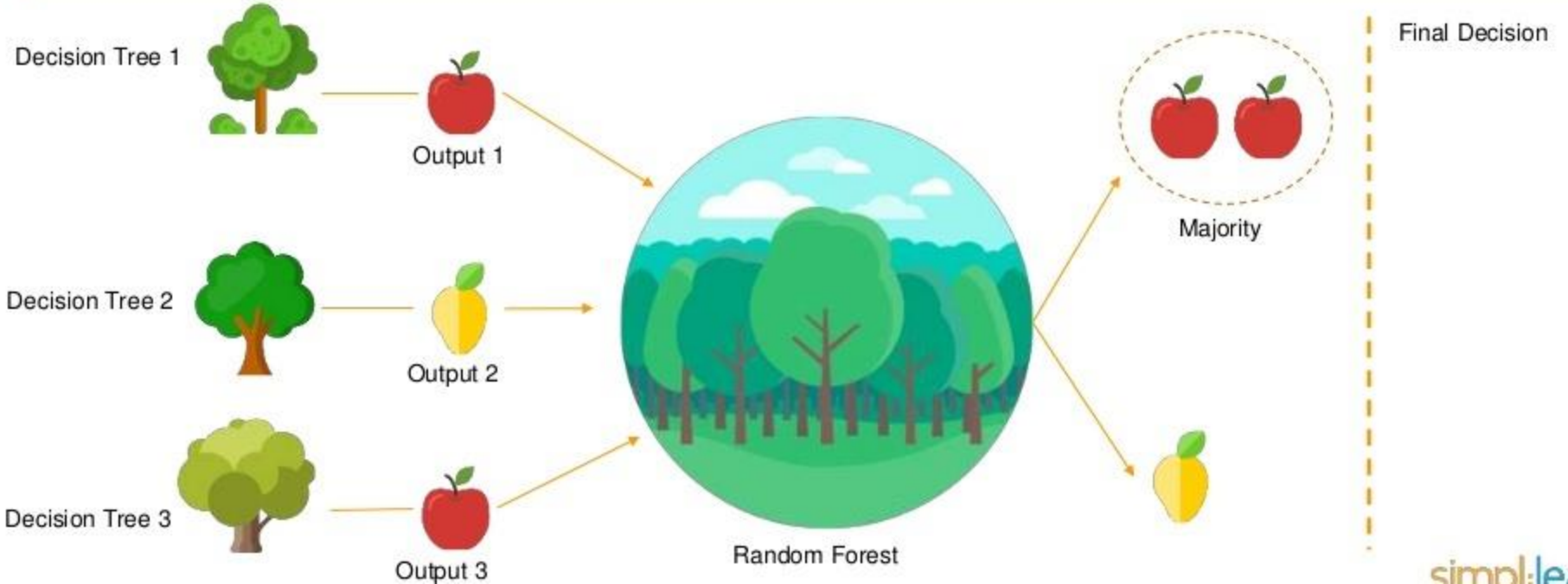

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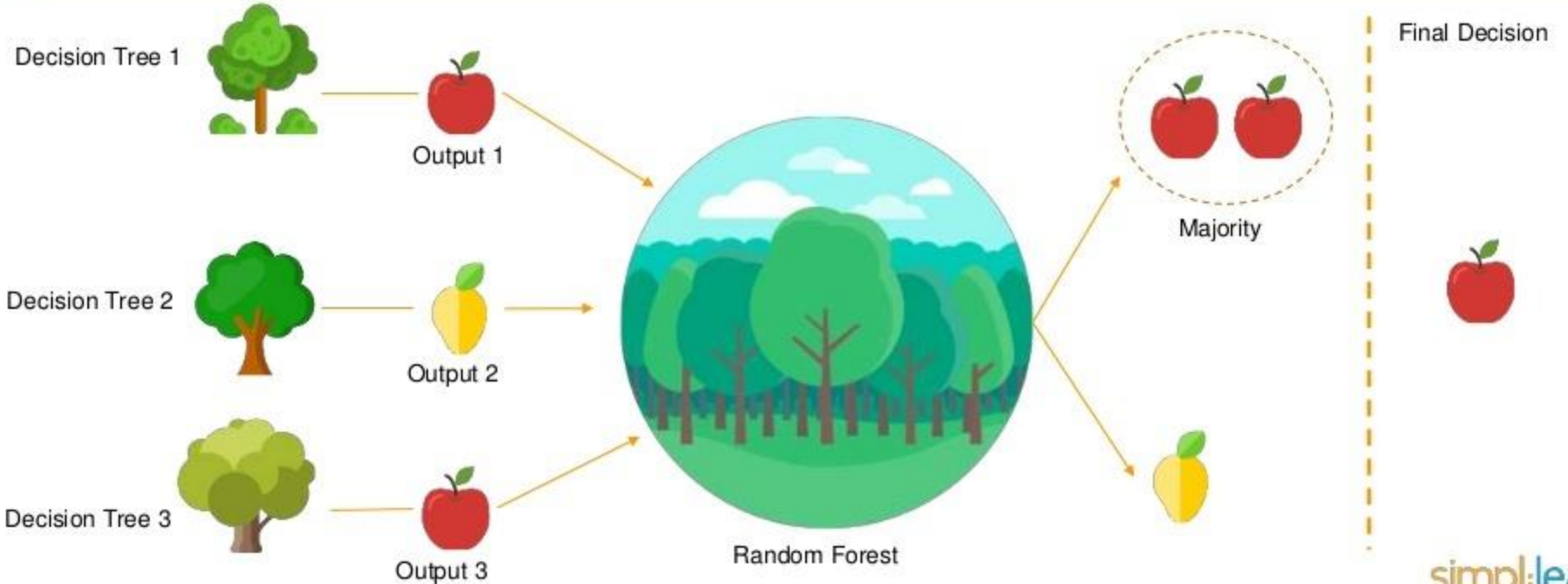
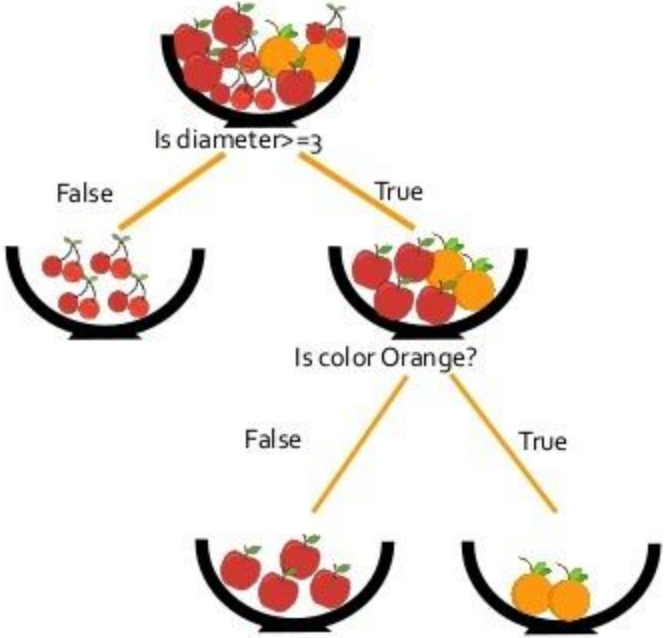



Random Forest and Decision Tree

Decision Tree

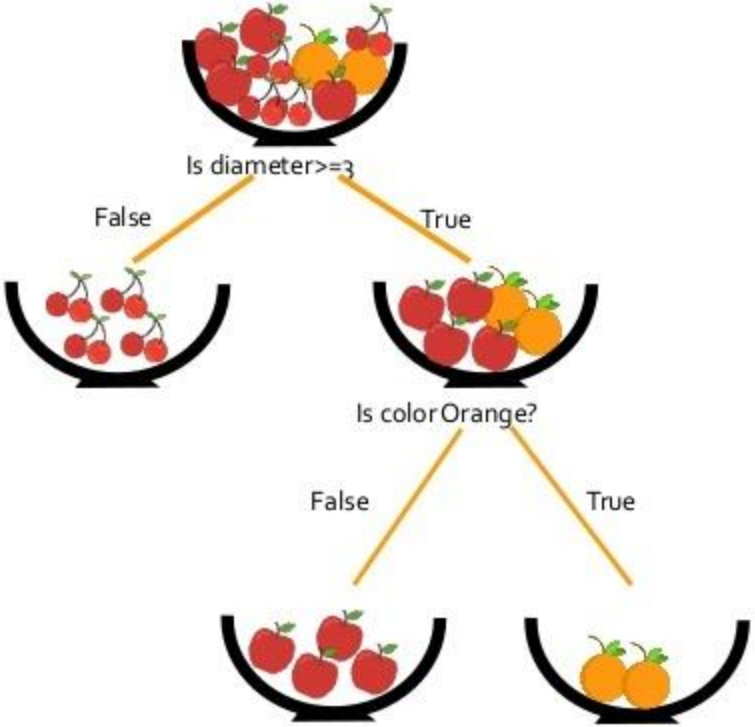
Decision Tree is a tree shaped diagram used to determine a course of action. Each branch of the tree represents a possible decision, occurrence or reaction




How does Random Forest work?

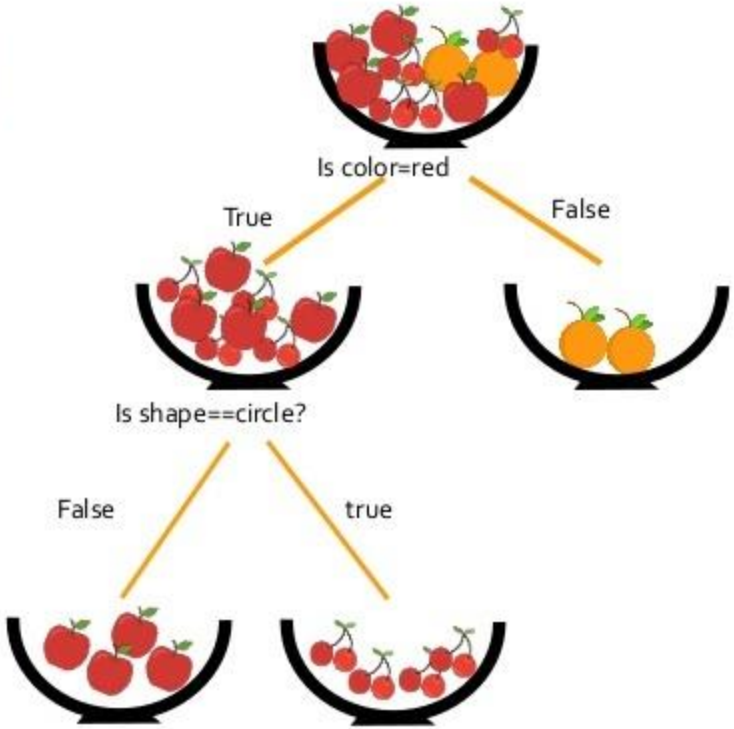
How does a Random Forest work?

Let this be Tree 1



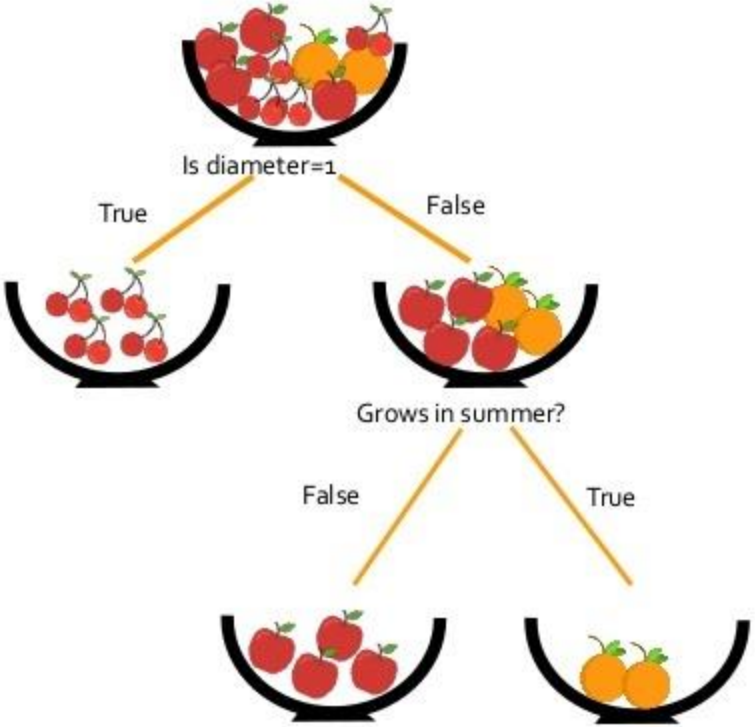
How does a Random Forest work?

Let this be Tree 2



How does a Random Forest work?

Let this be Tree 3



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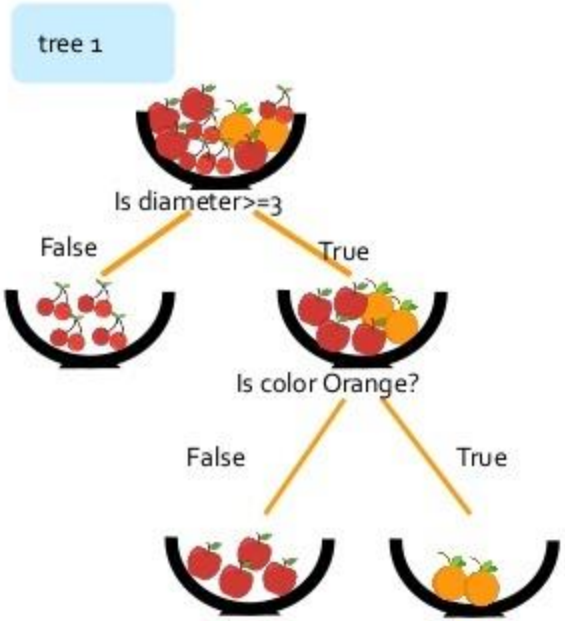
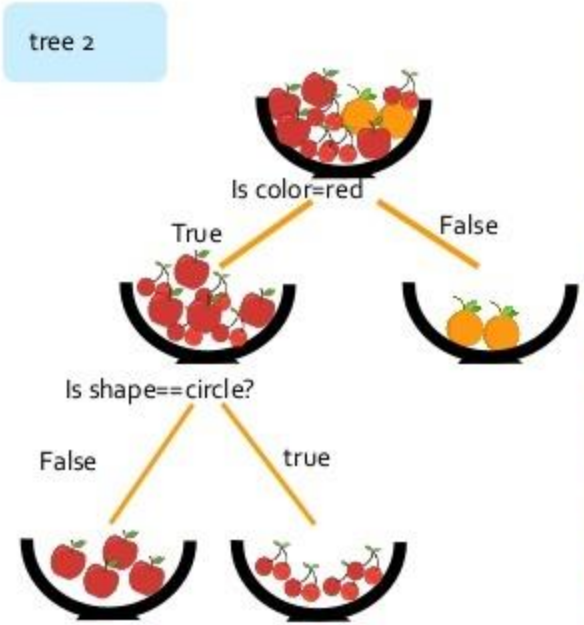
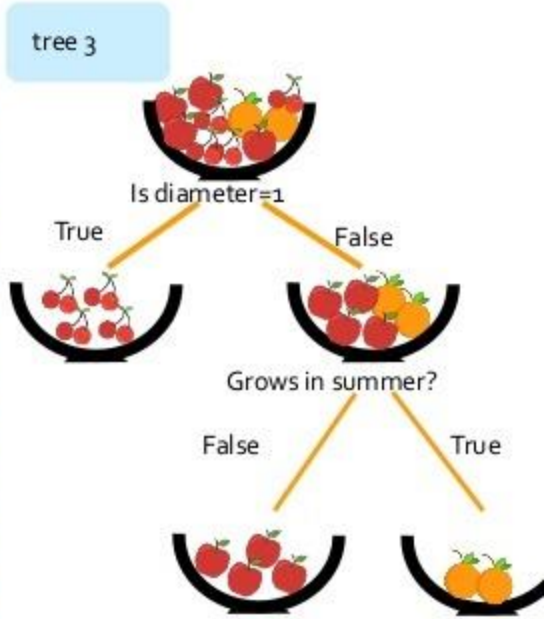






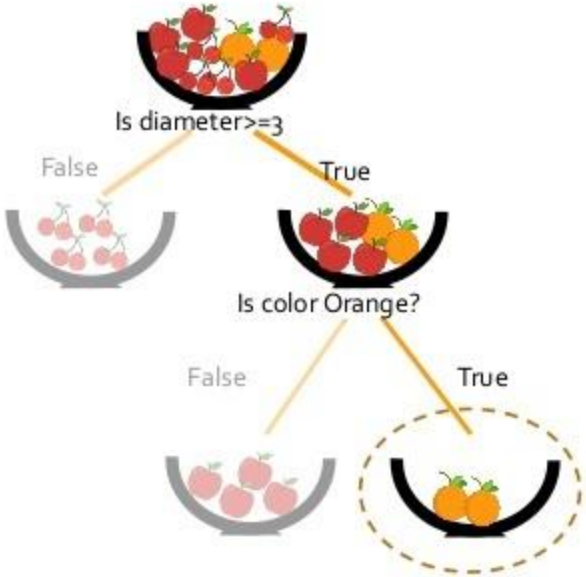
How does a Random Forest work?

Now Lets try to classify this fruit

How does a Random Forest work?

Tree 1 classifies it as an orange

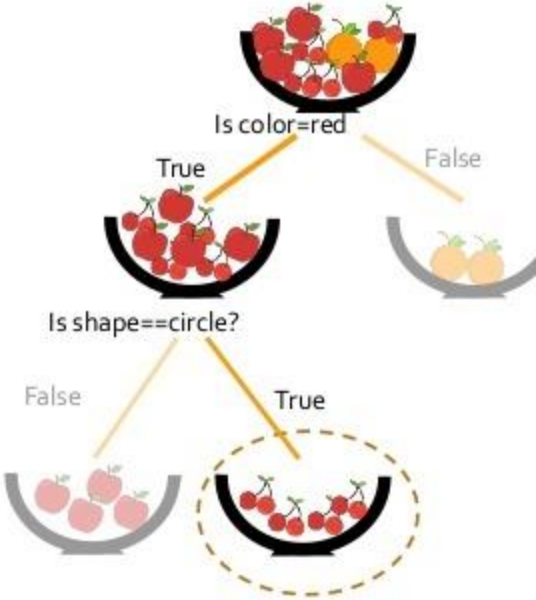
Diameter = 3
Colour = orange
Grows in summer = yes
SHAPE = CIRCLE



How does a Random Forest work?

Tree 2 classifies it as cherries

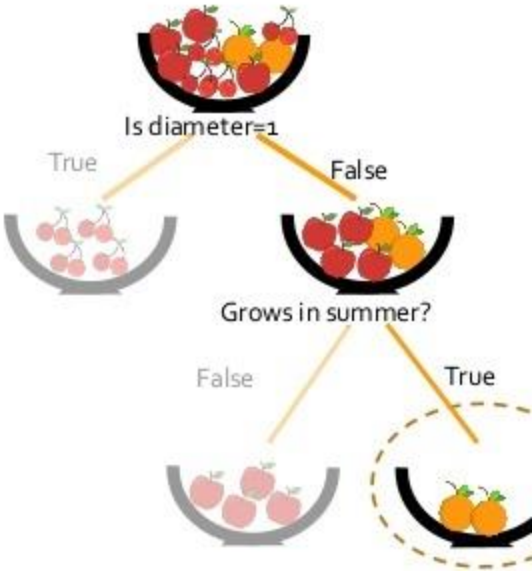
Diameter = 3
Colour = orange
Grows in summer = yes
SHAPE = CIRCLE



How does a Random Forest work?

Tree 3 classifies it as orange

Diameter = 3
Colour = orange
Grows in summer = yes
SHAPE = CIRCLE



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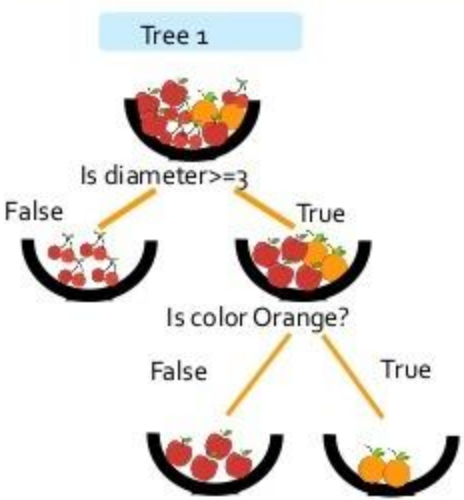

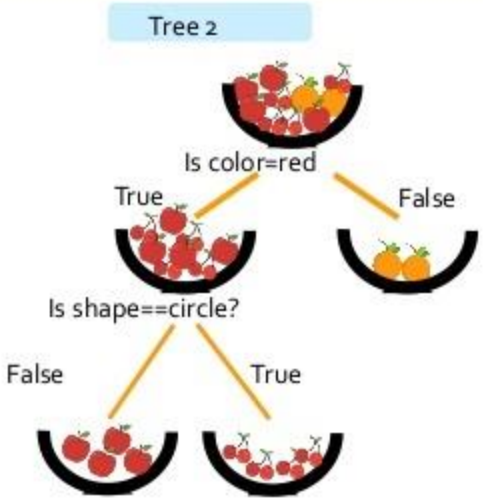

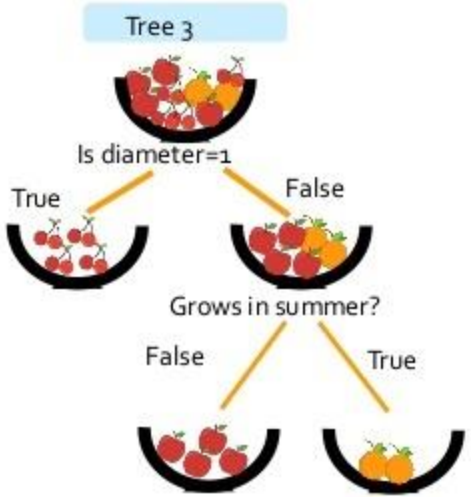

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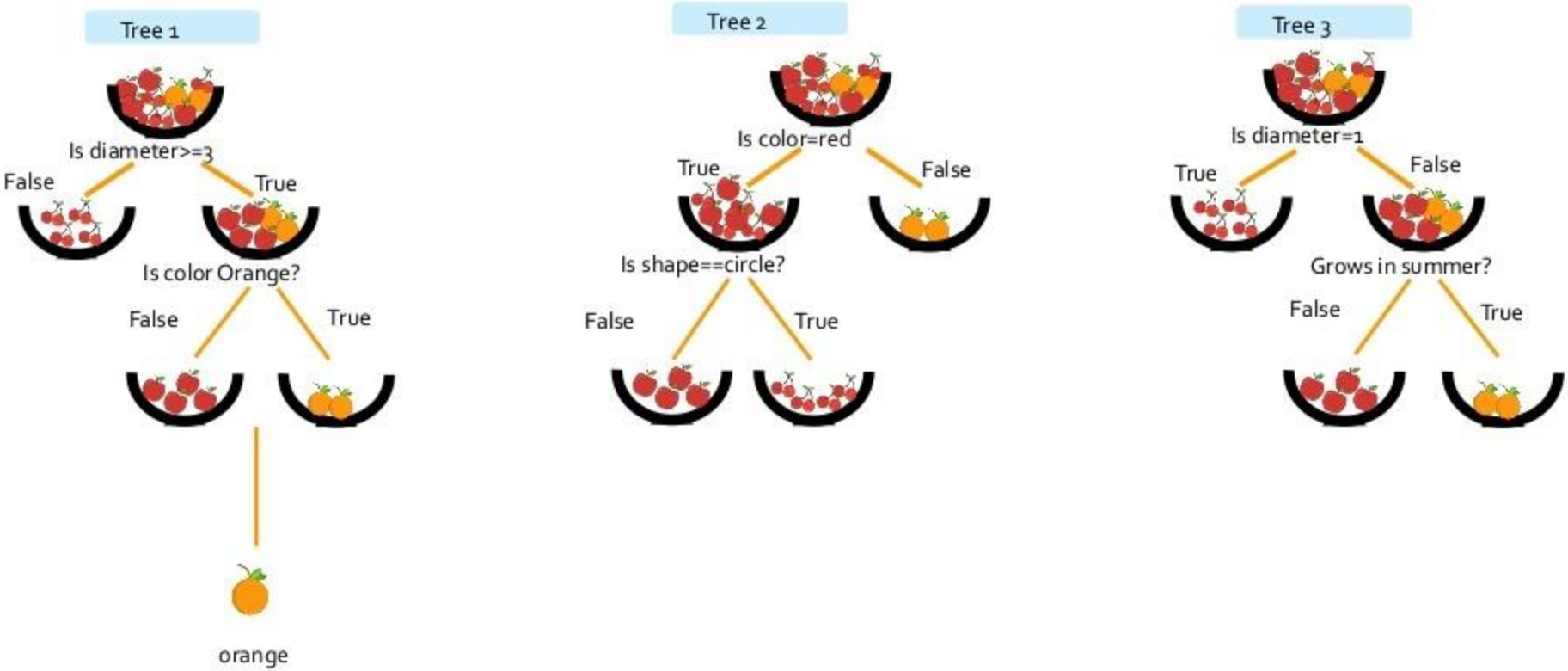

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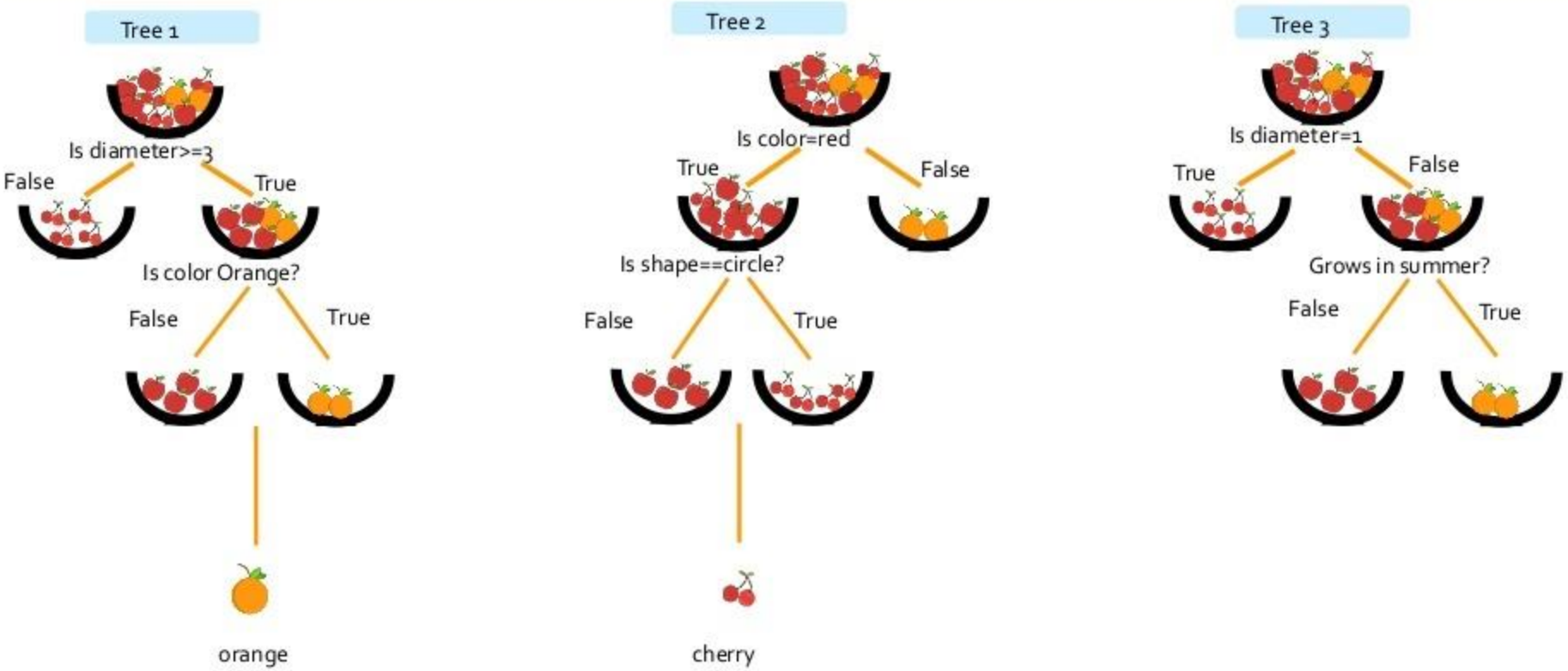

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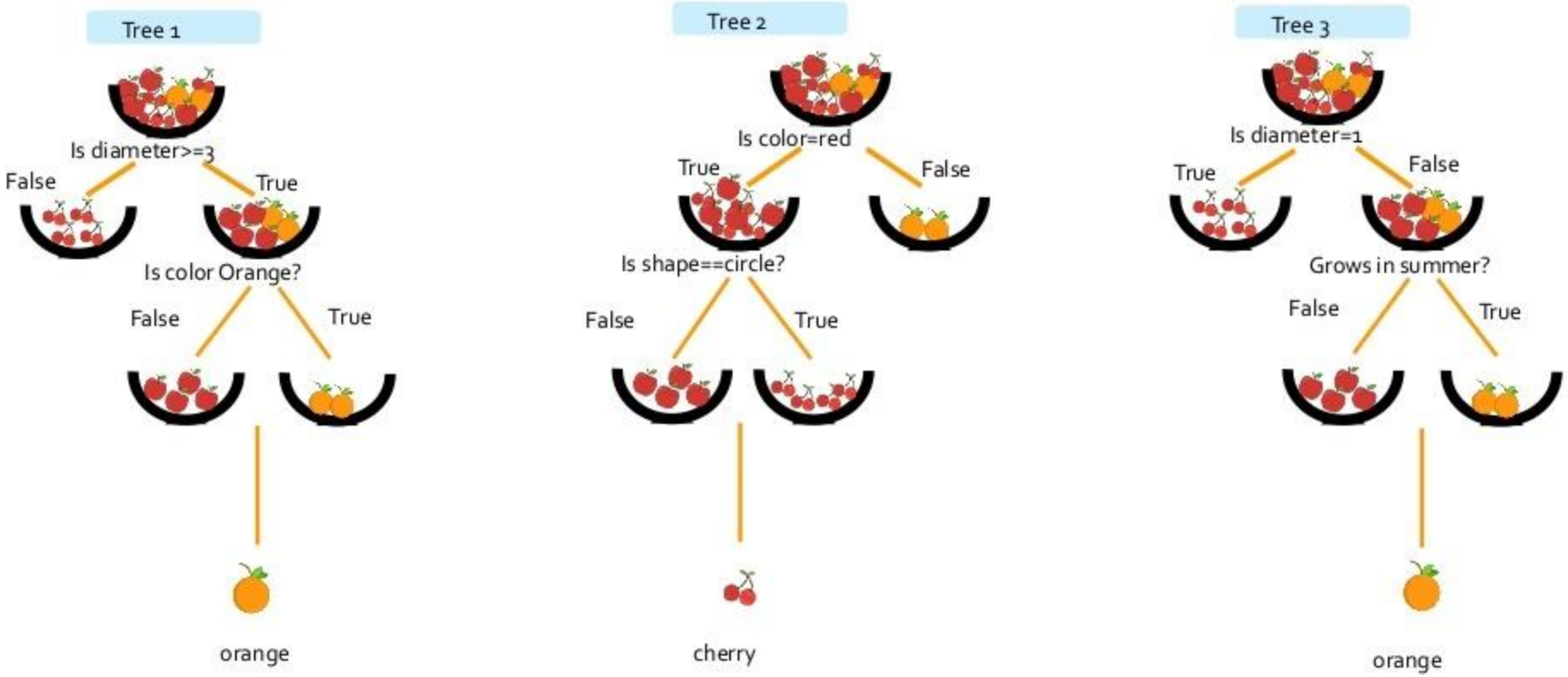

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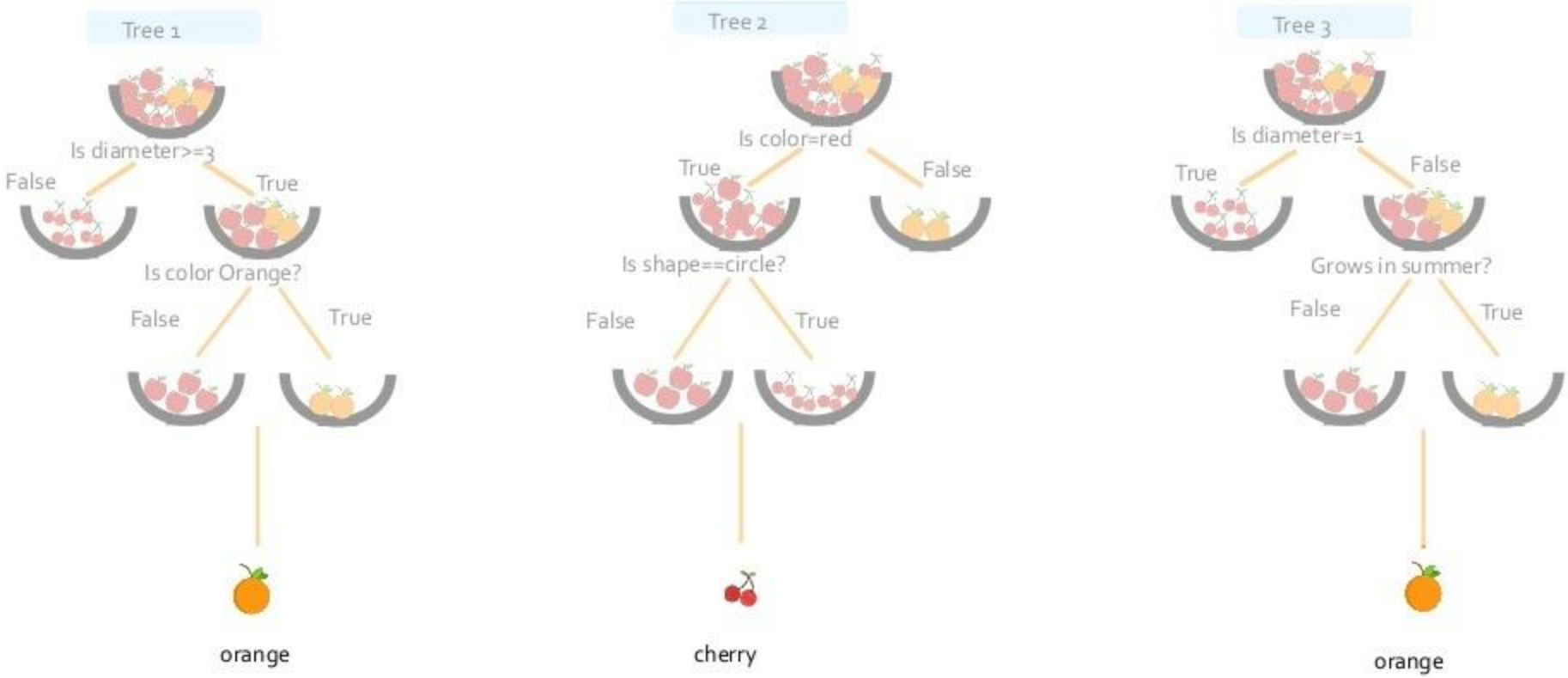

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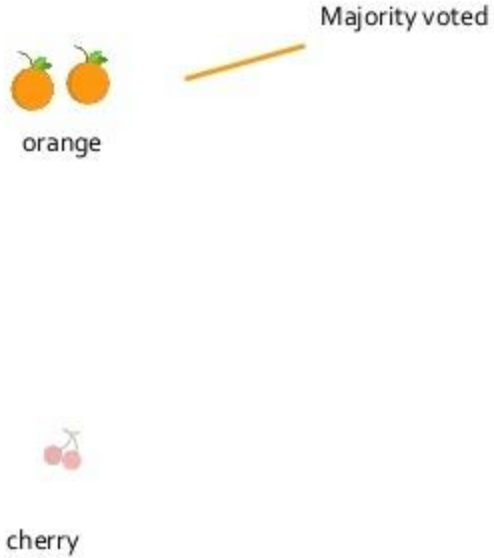

How does a Random Forest work?

So the fruit is classified as an orange

How does a Random Forest work?

So the fruit is classified as an orange


THANK YOU
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Confusion matrix