Random Forest

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Application of Random Forest

Remote Sensing

Used in ETM devices to acquire images of the earth's surface.

Accuracy is higher and training time is less

Object Detection

Multiclass object detection is done using Random Forest algorithms

Provides better detection in complicated environments

Kinect

Random Forest is used in a game console called Kinect

Tracks body movements and recreates it in the game

Application of Random Forest

Kinect

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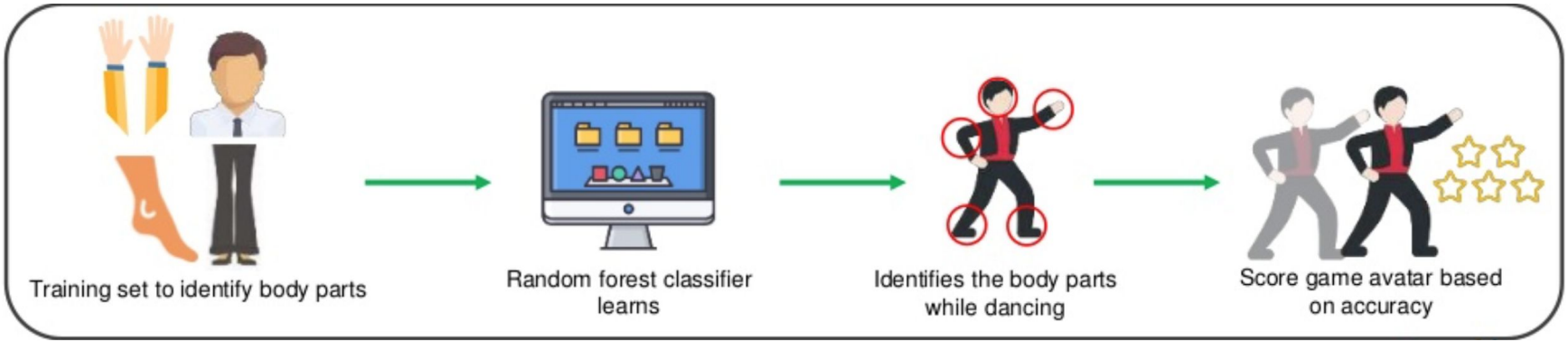
Application of Random Forest

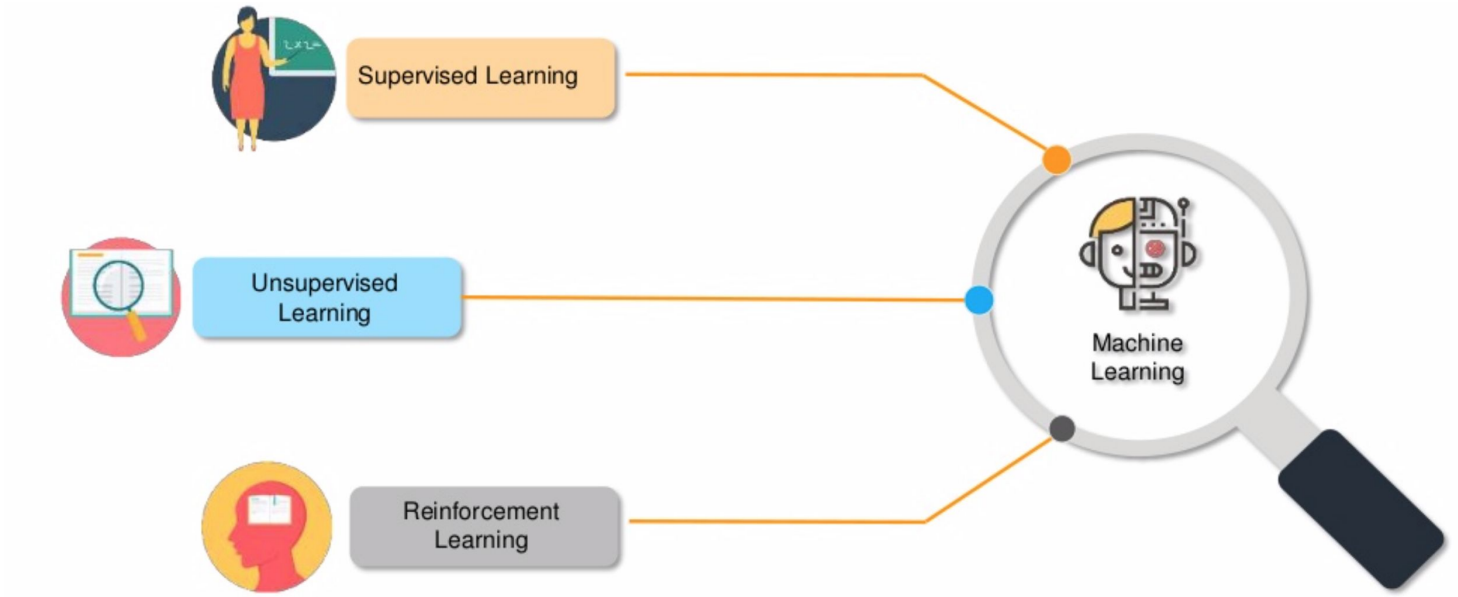
User performs a step

Kinect registers the movement

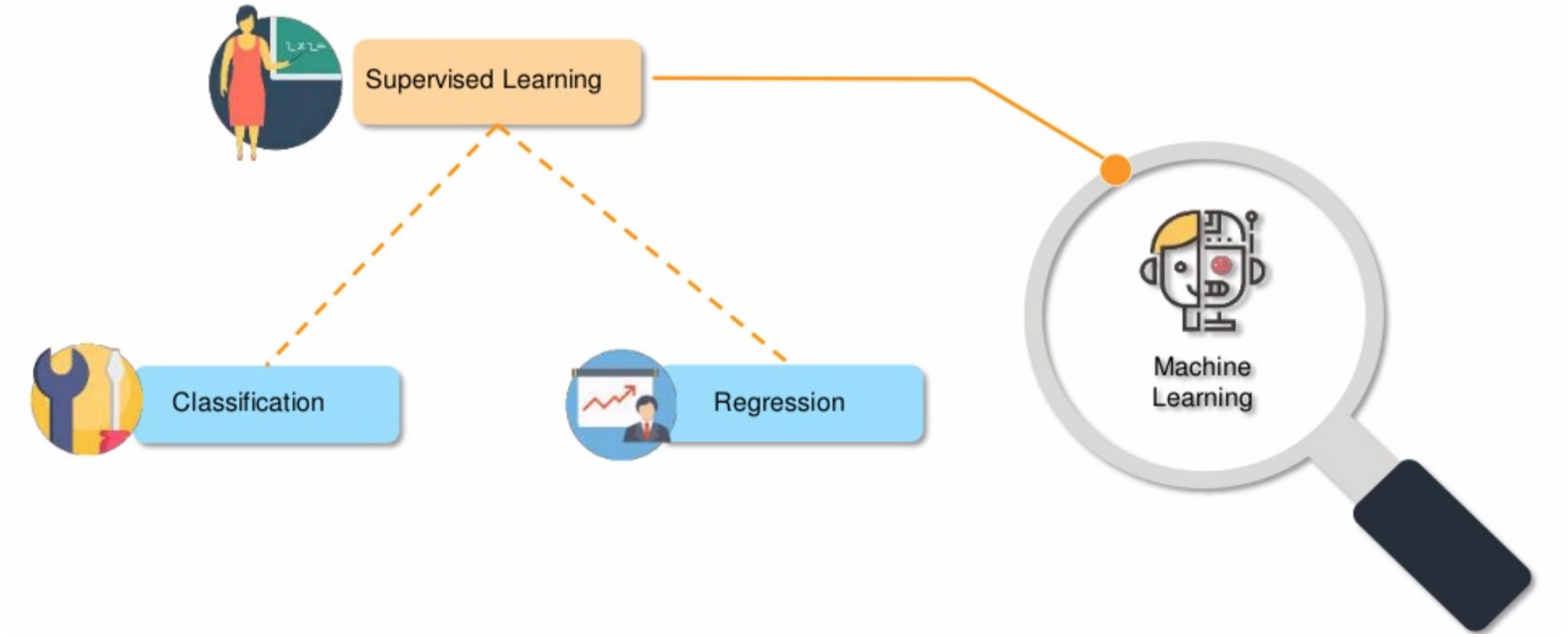
Marks the user based on accuracy



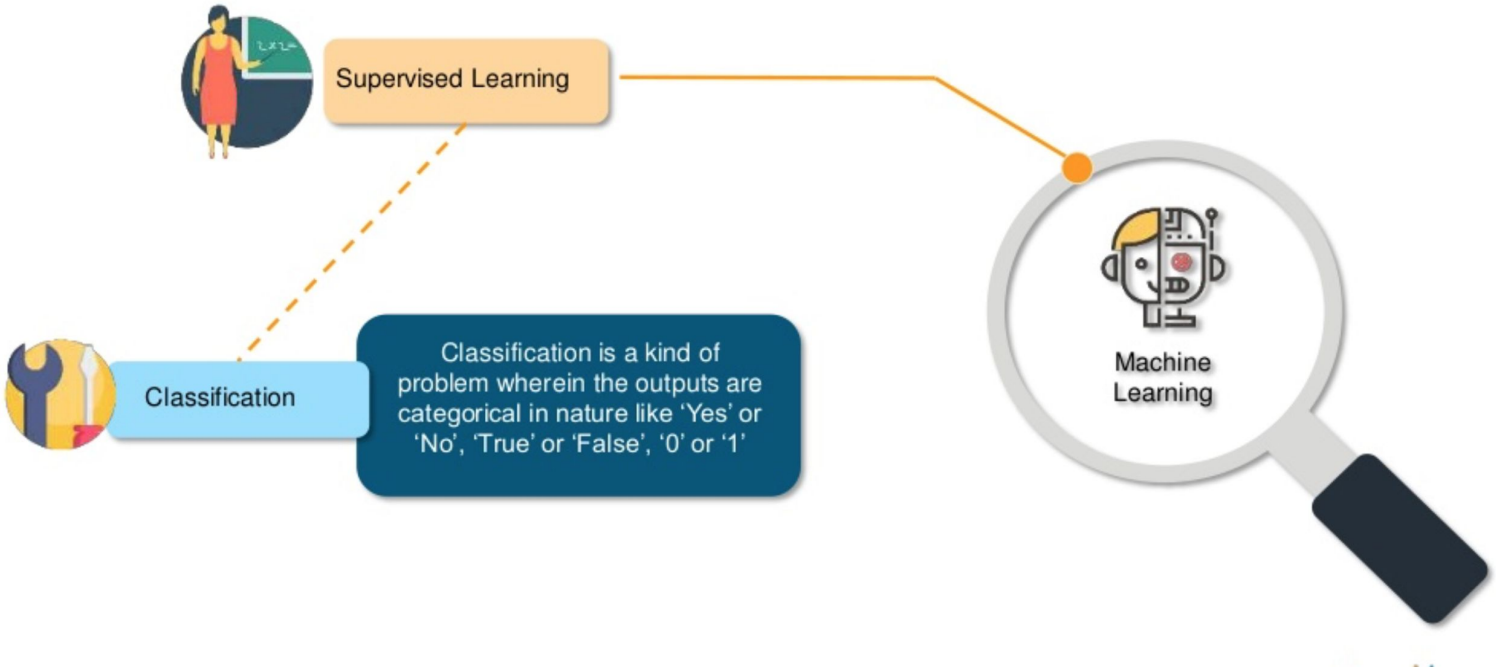
Types of Machine Learning



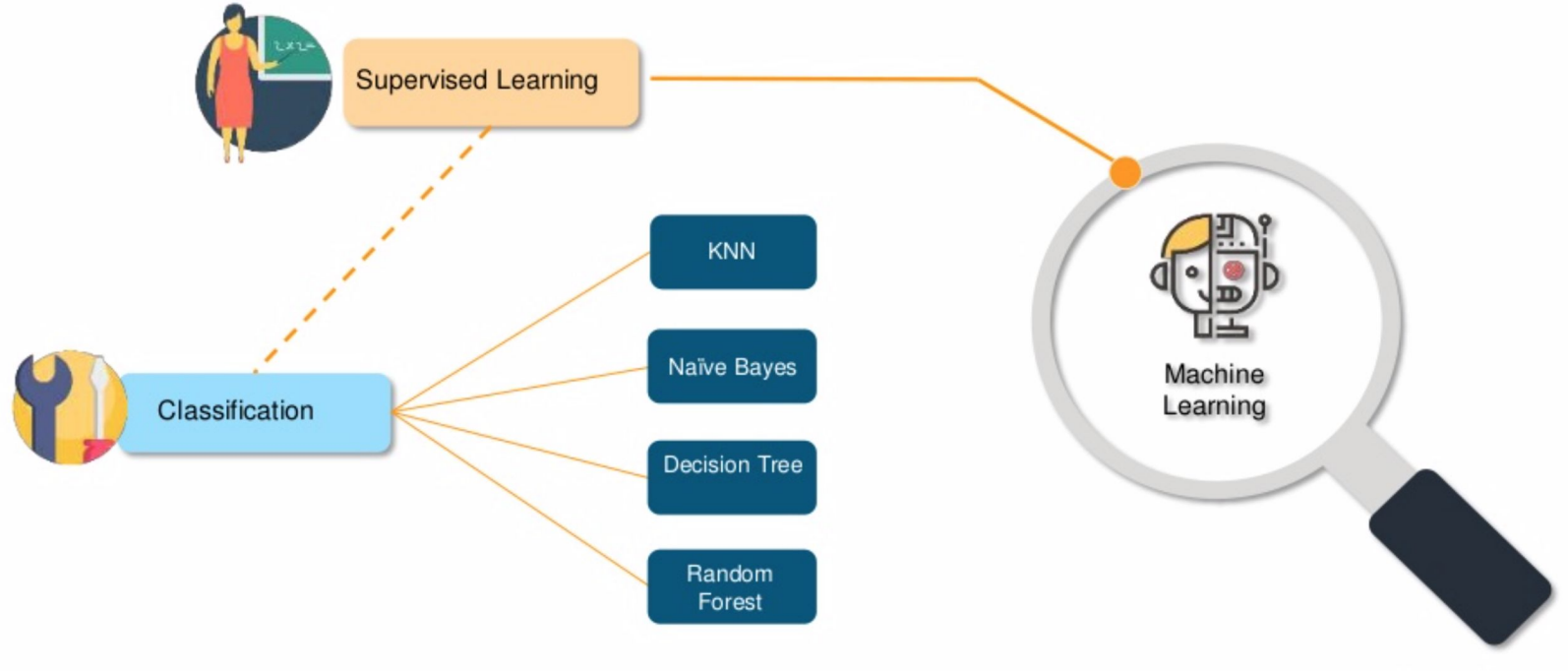
Types of Machine Learning



What is Classification?



Solutions Under Classification



Why Random Forest?

No overfitting

Use of multiple trees reduce the risk of overfitting

Training time is less

High accuracy

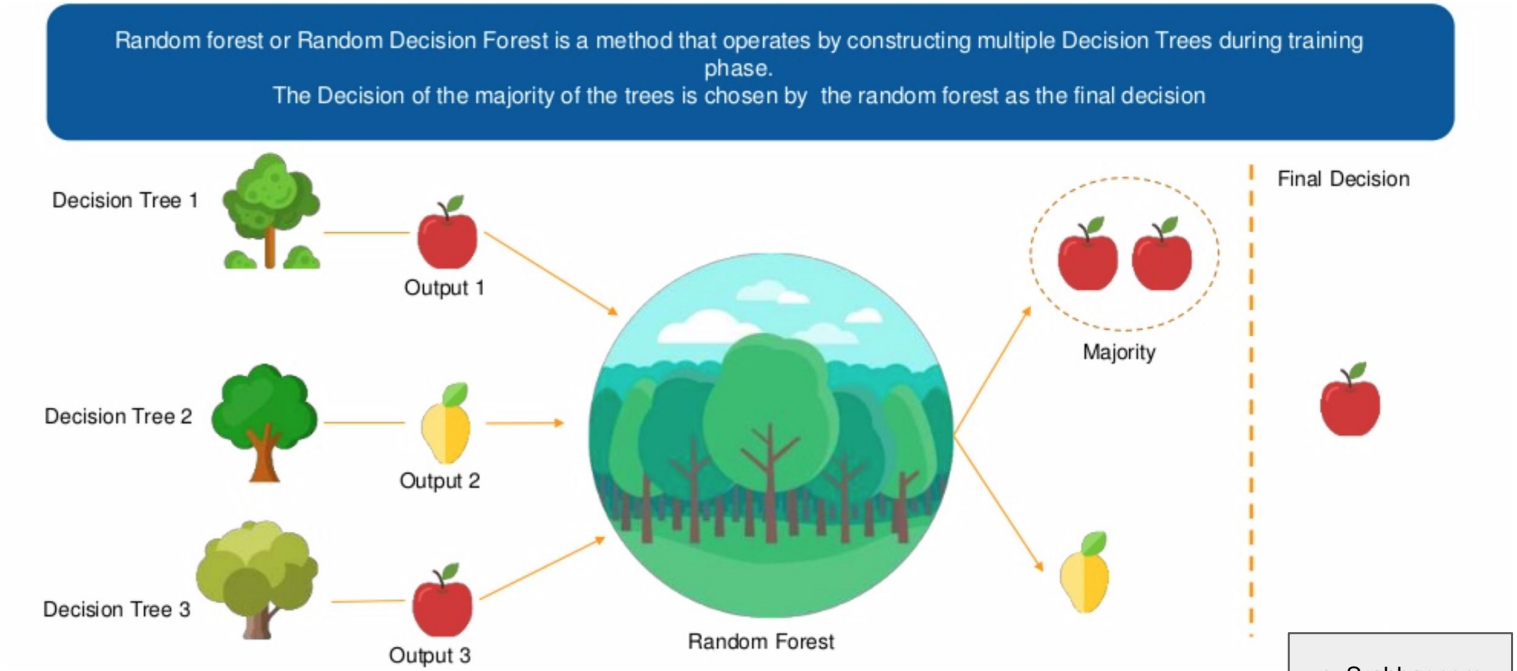
Runs efficiently on large database

For large data, it produces highly accurate predictions

Estimates missing data

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

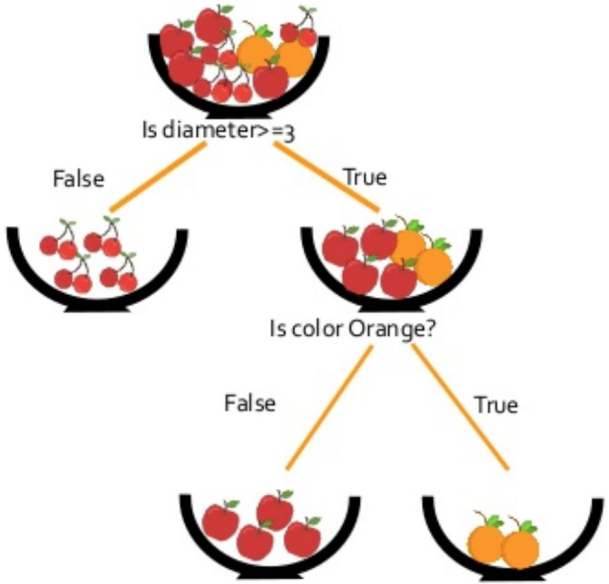
What is Random Forest?



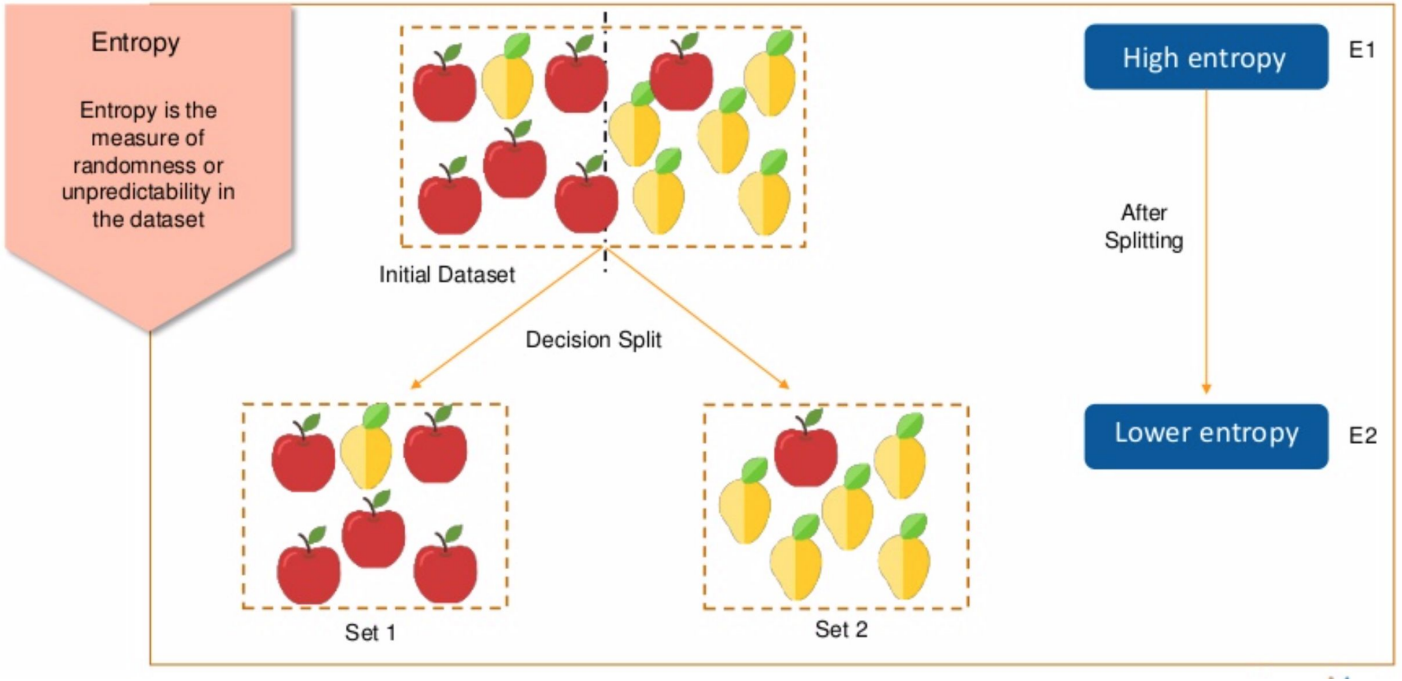
s: Srahbar.com

Random Forest and 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



Decision Trees (Important Concepts):



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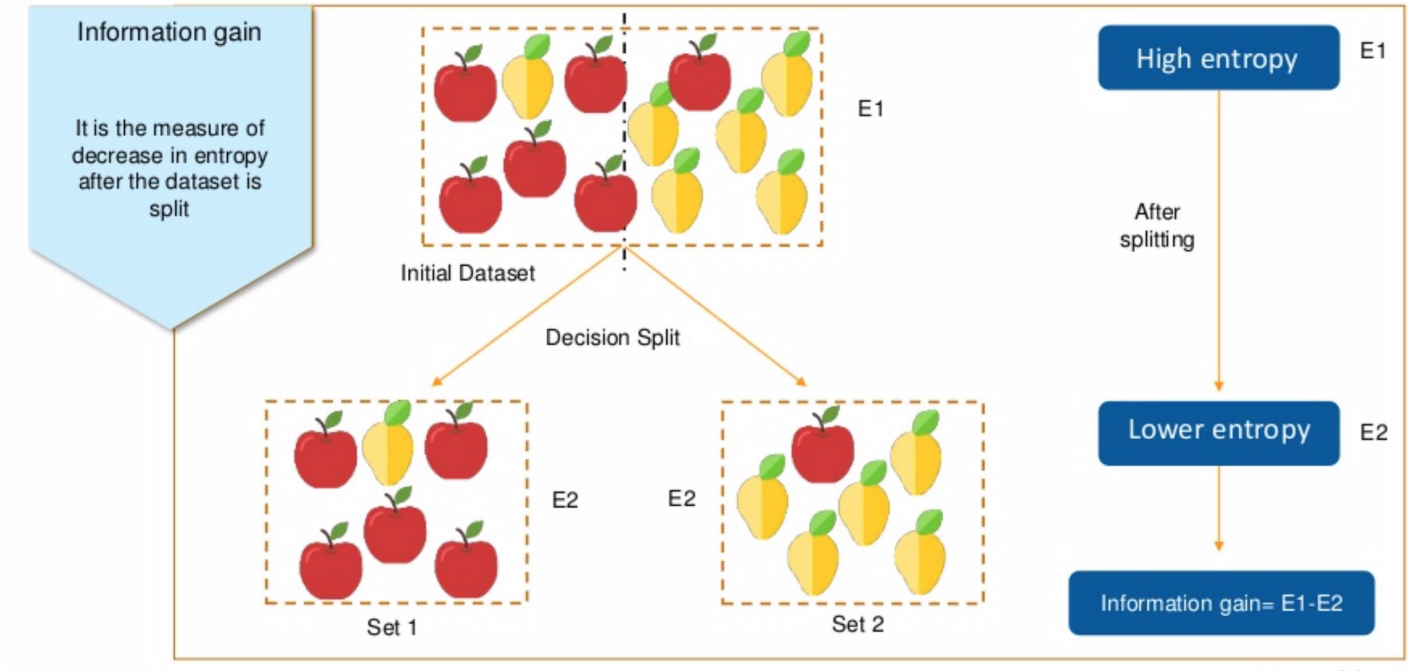

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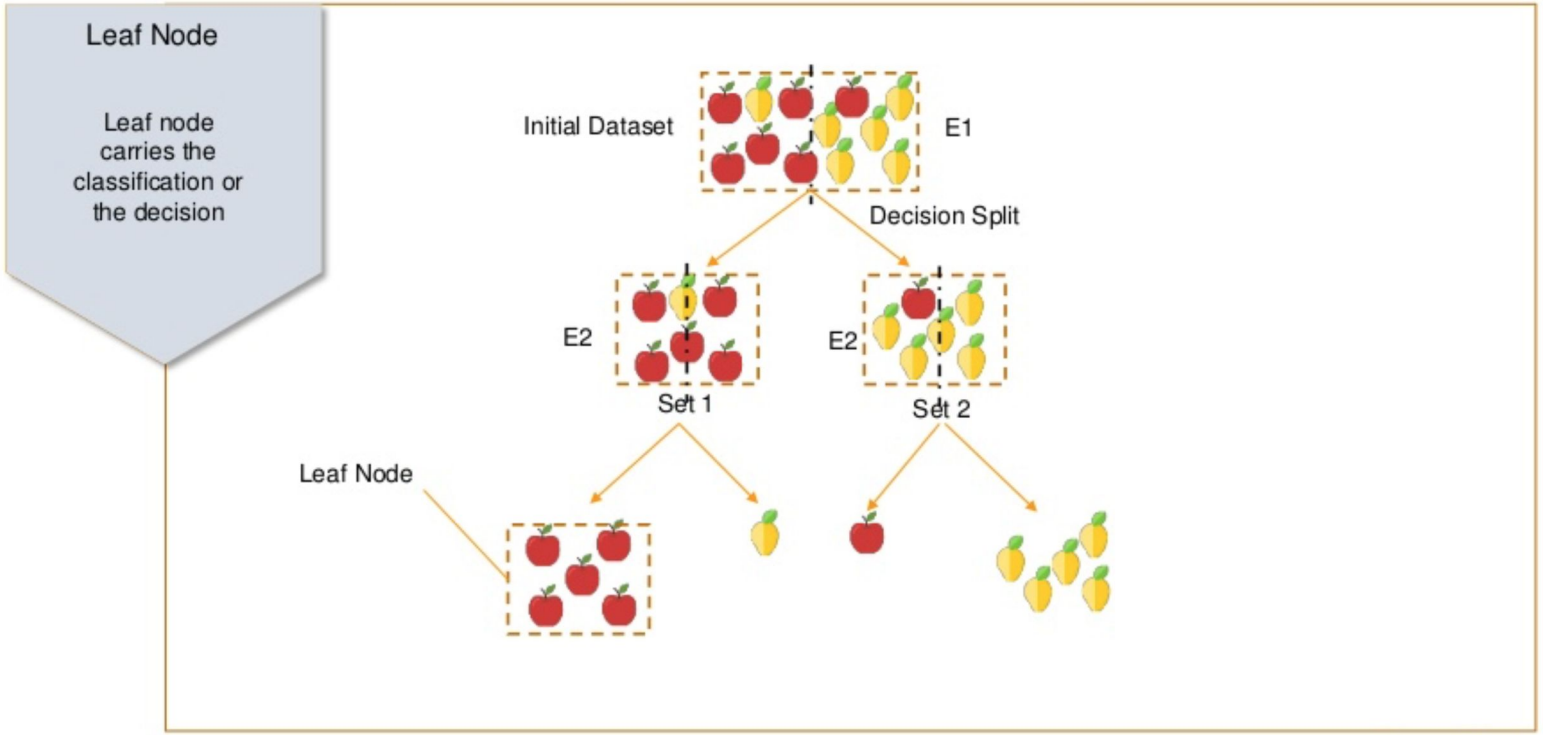

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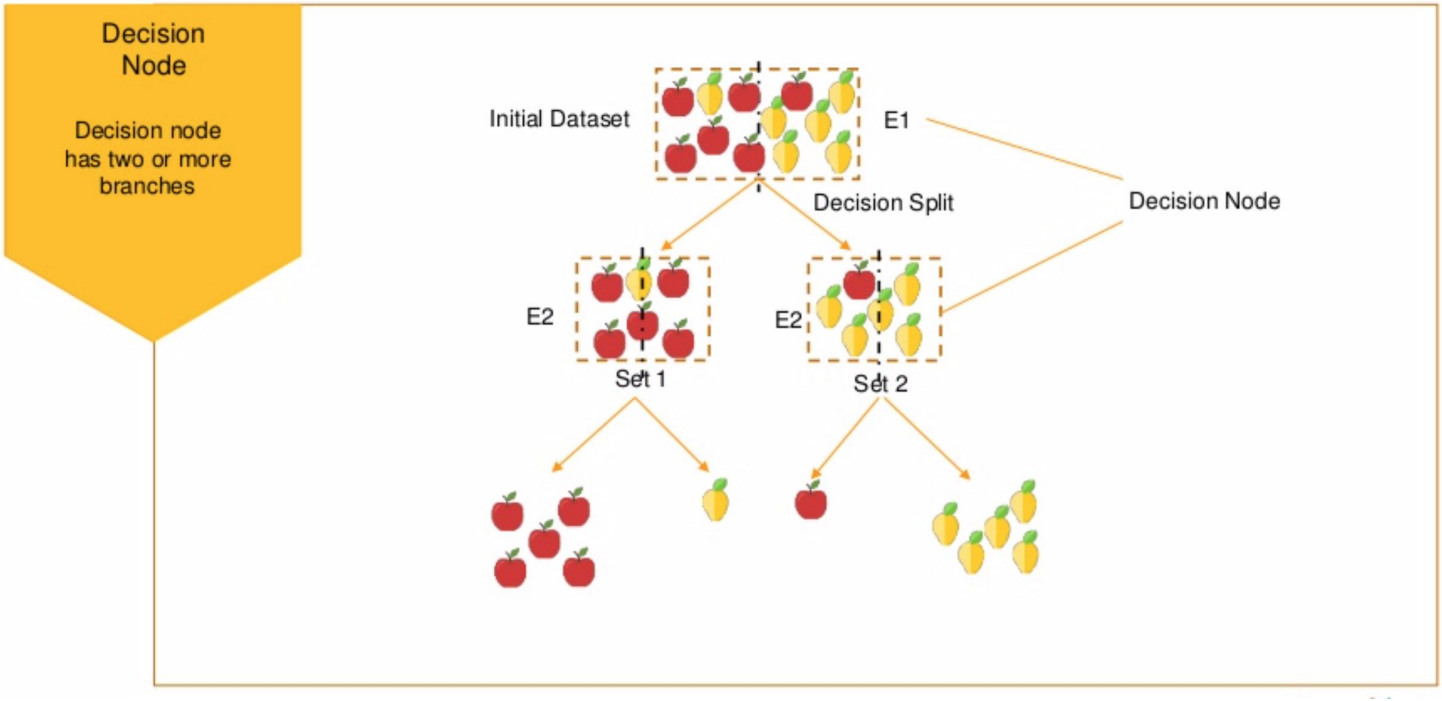

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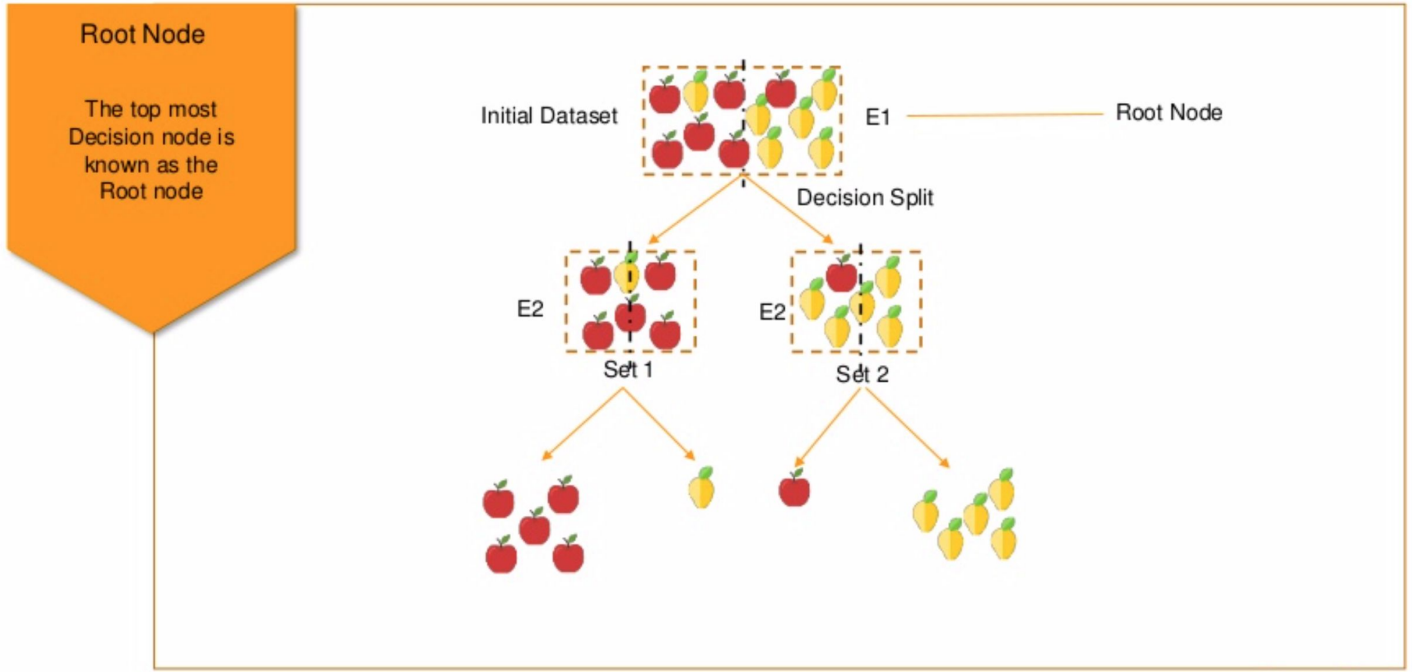

How does a random forest work?

Problem statement

To classify the different types of fruits in the bowl based on different features

How does a random forest work?

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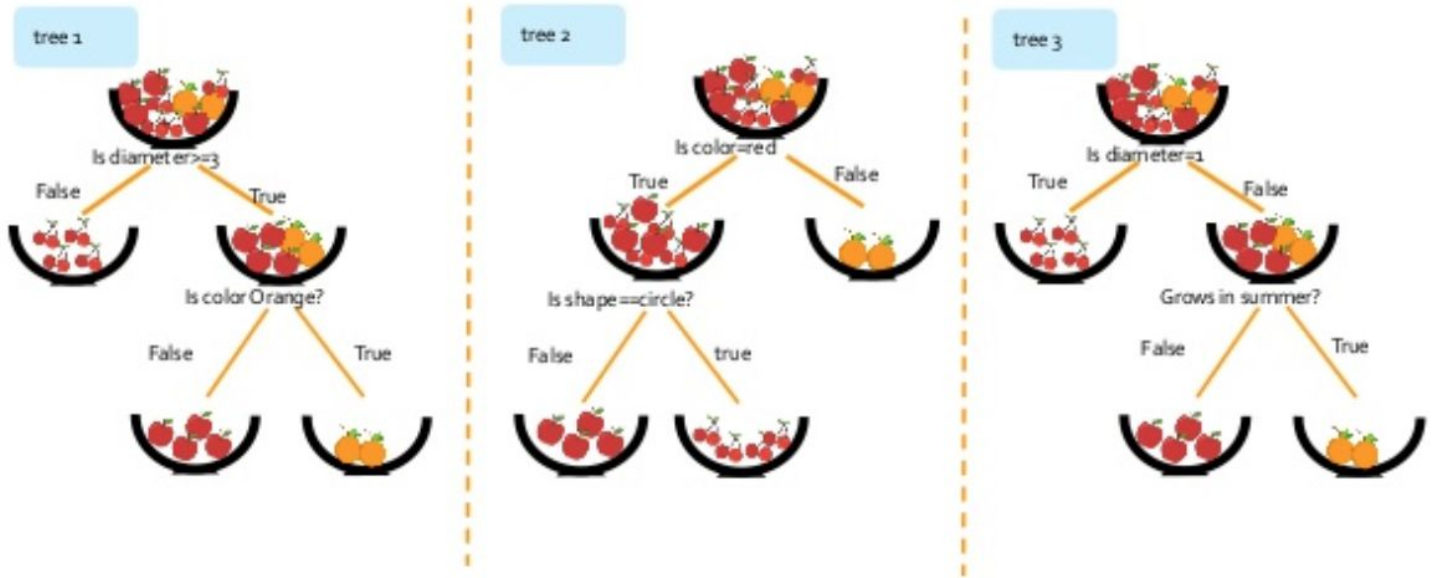


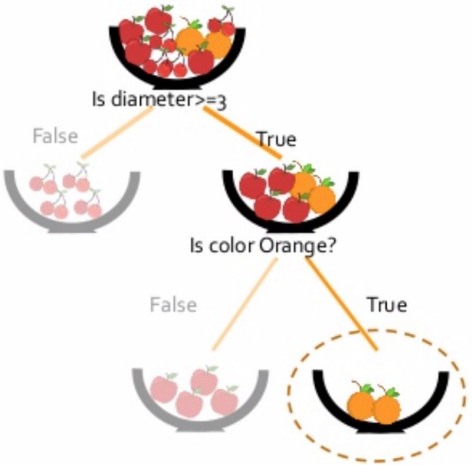
How does a random forest work?

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



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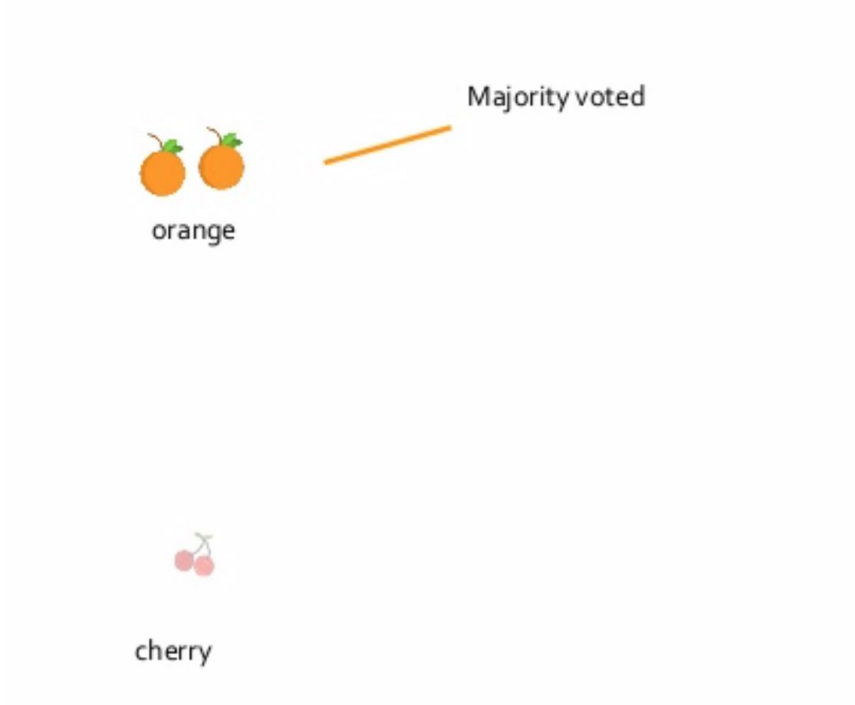

Practical Example:

Refer to jupyter notebook

Questions?