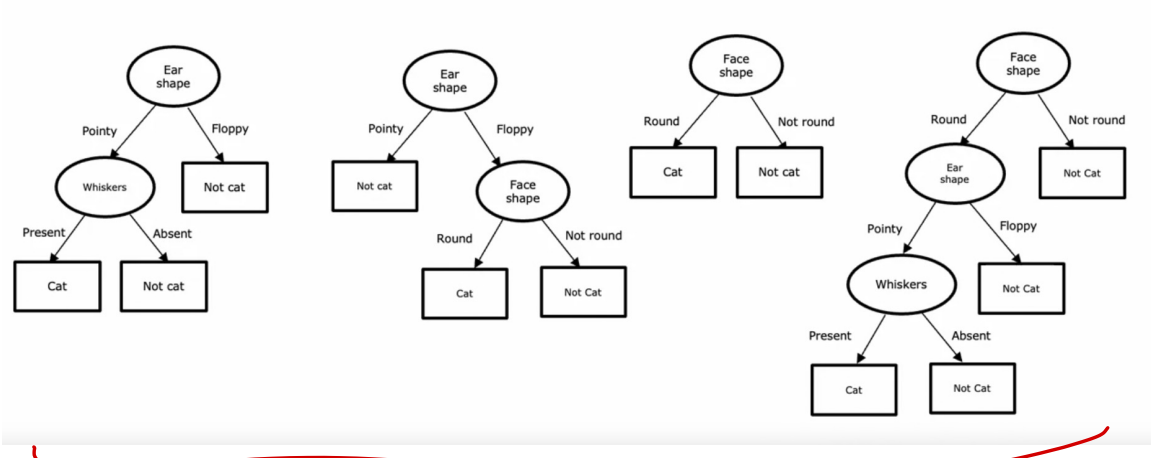
There are many decision trees and the purpose of the decision tree algorithm is to choose the most appropriate decision tree which performs well on the training set as well as the cv and test set.

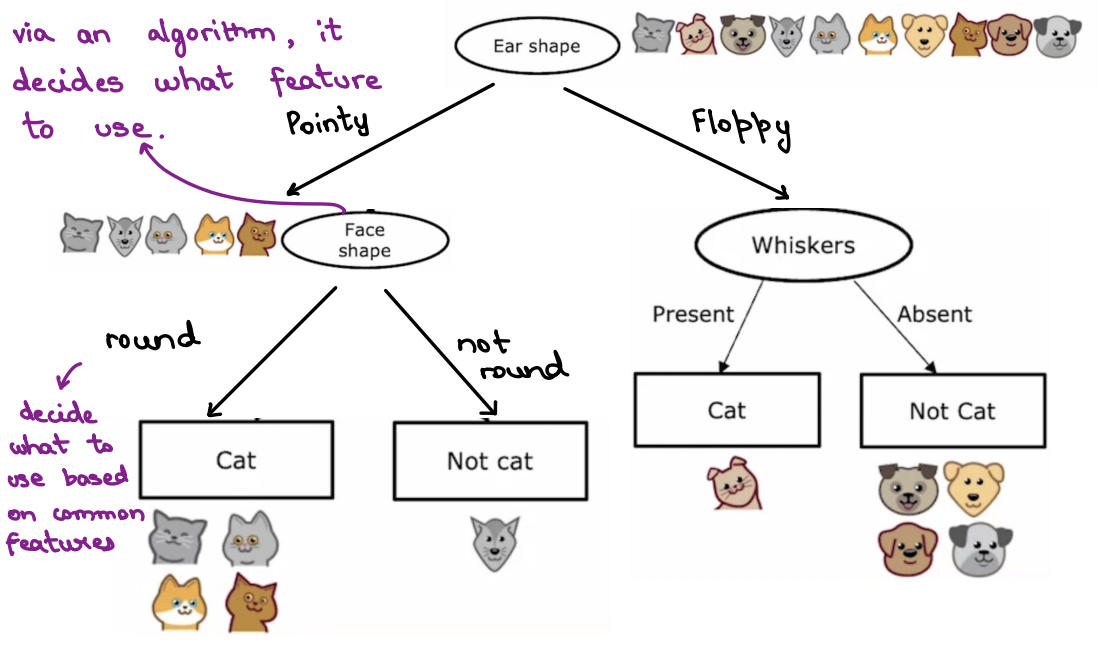


different decision tree

Process of deciding what algorithm to use.

→ Firstly, decide what feature to use as the root node.

→ Next, we split it according to ear shape.

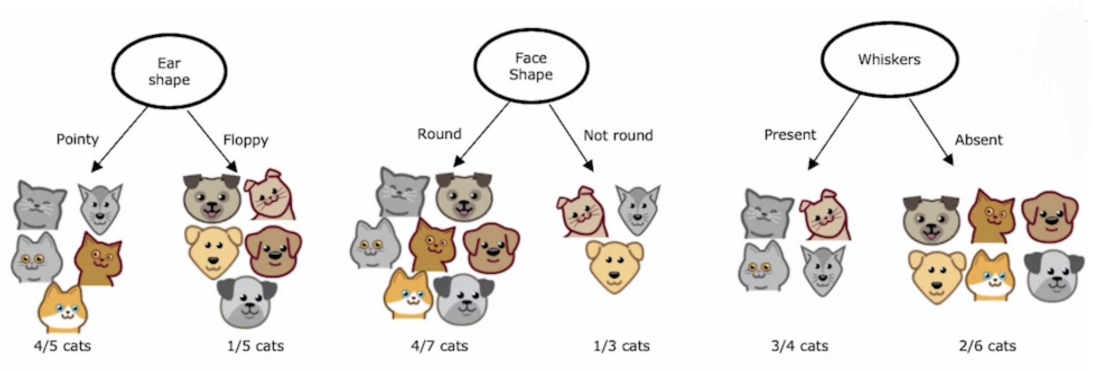


Key decisions that were made while crafting the decision tree

Decision 1: How to choose what feature to split on at each node. They do it in order to maximize purity (or minimize impurity), basically we want to obtain subsets that are very close to cats and dogs (one side is cats and the other dogs)

From all the possible options, we choose the option that gets us maximum purity.

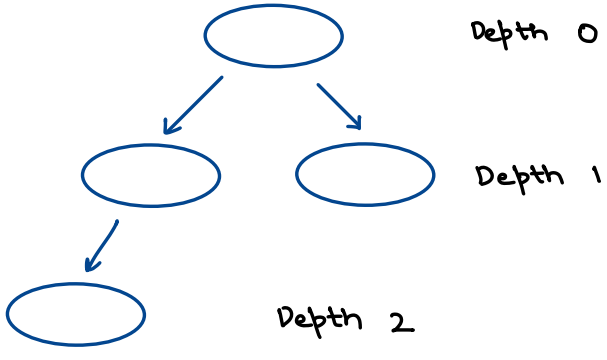
for eg.



Decision 2 : When do you stop splitting?

1. When a node 100% belongs to one class.
2. When the maximum depth i.e. the point till which we want to allow the tree to grow. That depth is set by us.

The depth of a node is defined as the no. of hops it takes to reach that particular node.



→ We set a particular depth of a tree so that we make sure that tree doesn't become very big and to make it less prone to overfitting.

4. Improvements in purity score might not occur below a threshold

5. When a no. of examples in a node is below a threshold. (To avoid overfitting)