**ALGORITHM:**

**DECISION TREE LEARNING**

Decision tree learning uses a [decision tree](https://en.wikipedia.org/wiki/Decision_tree) (as a [predictive model](https://en.wikipedia.org/wiki/Predictive_modelling)) to go from observations about an item (represented in the branches) to conclusions about the item's target value (represented in the leaves). It is one of the predictive modeling approaches used in [statistics](https://en.wikipedia.org/wiki/Statistics), [data mining](https://en.wikipedia.org/wiki/Data_mining) and [machine learning](https://en.wikipedia.org/wiki/Machine_learning). Tree models where the target variable can take a discrete set of values are called classification trees; in these tree structures, [leaves](https://en.wikipedia.org/wiki/Leaf_node) represent class labels and branches represent [conjunctions](https://en.wikipedia.org/wiki/Logical_conjunction) of features that lead to those class labels. Decision trees where the target variable can take continuous values (typically [real numbers](https://en.wikipedia.org/wiki/Real_numbers)) are called regression trees.

In decision analysis, a decision tree can be used to visually and explicitly represent decisions and [decision making](https://en.wikipedia.org/wiki/Decision_making). In [data mining](https://en.wikipedia.org/wiki/Data_mining), a decision tree describes data (but the resulting classification tree can be an input for [decision making](https://en.wikipedia.org/wiki/Decision_making)). This page deals with decision trees in [data mining](https://en.wikipedia.org/wiki/Data_mining).

Decision tree learning is a method commonly used in data mining.[[1]](https://en.wikipedia.org/wiki/Decision_tree_learning#cite_note-tdidt-1) The goal is to create a model that predicts the value of a target variable based on several input variables. An example is shown in the diagram at right. Each node corresponds to one of the input variables; there are edges to children for each of the possible values of that input variable. Each leaf represents a value of the target variable given the values of the input variables represented by the path from the root to the leaf.