

Multivariate decision trees have several advantages compared to univariate decision trees, including:

Multivariate decision trees are able to capture more complex relationships between different variables. This allows them to better model real-world data and make more accurate predictions.

Multivariate decision trees can handle missing or incomplete data more gracefully than univariate decision trees. This is because they are able to use information from other variables to make predictions, even if some data is missing.

Multivariate decision trees are more interpretable than univariate decision trees. This is because they use multiple variables to make predictions, so the relationships between the variables are more transparent and easier to understand.

Multivariate DT can be of lesser depth as compared to univariate DT, and it is not restricted to only orthogonal boundaries.

However, there are also some disadvantages to using multivariate decision trees, including:

Multivariate decision trees can be more difficult to train and tune than univariate decision trees. This is because they have more parameters and require more data to model the complex relationships between the variables. Also, because it uses regression techniques in further splitting, which is expensive computationally.

Multivariate decision trees can be more sensitive to noise and outliers in the data. This is because they use multiple variables to make predictions, so a small amount of noise or outlier data can have a larger impact on the model's performance.

The given data can be considered as 2-dimension (as we have two features i.e. age and salary) and hence the algorithm works efficiently. But there can be some challenges when the data is uneven, unseparable and not clustered. So, for such data it is best to use univariate trees.

##### Reference:

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