



Creating features with decision trees



Combining features with trees

Again, the idea is to create linear features with the target, when the original variables are not.





Combining features with trees

In the winning solution of the KDD competition in 2009, the authors created new features by combining two or more variables using decision trees.



Combining features with trees

Some predictors had high mutual information with the target yet low correlation → the relationship with the target was not monotonic.

These features were predictive when used in tree-based algorithms, linear models could not take advantage of them.

Hence, to use these features in linear models, they replaced the features with the outputs of decision trees trained on the individual features, or combinations of 2 or 3 variables.



Pros and cons

Plus: Captures non-linearity.

Plus: Captures feature interaction

Con: Returns features that are hard to understand or explain.

Con: Adds a lot of complexity to the overall machine learning pipeline

THANK YOU

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