**Guidance Note explaining feature selection techniques in machine learning to a hypothetical student struggling with the concept.**

Filter methods: These methods evaluate the relevance of features independently of the machine learning algorithm chosen. These techniques utilize statistical measures to rank and choose features. Some examples of filter methods are:

- Variance Threshold: This method removes features that have low variance, meaning they do not change much from one observation to another and therefore do not contribute much to the prediction.

- Chi-Square Test: This method tests the independence of features and the target variable, meaning it measures how much the distribution of features differs across different target classes. Features that have high chi-square values are more likely to be relevant for the prediction.

Wrapper methods: These methods use a machine learning algorithm to evaluate the performance of different subsets of features and select the best one. These techniques are more computationally expensive than filter methods, but they can find more optimal feature combinations. Some examples of wrapper methods are:

Recursive Feature Elimination: This method starts with all features and iteratively removes the least important feature based on the model performance until a desired number of features is reached.

Forward Selection: This method starts with an empty set of features and iteratively adds the most important feature based on the model performance until a desired number of features is reached.

Embedded methods: These methods combine the advantages of filter and wrapper methods by incorporating feature selection as part of the model training process. These techniques can capture the interactions between features and the target variable, as well as reduce overfitting. Some examples of embedded methods are:

- Lasso Regression: This method is a type of linear regression that applies a penalty to the coefficients of features, shrinking them to zero and effectively removing them from the model.

- Decision Tree: This method is a type of classification or regression model that splits the data into branches based on the values of features, creating a hierarchical structure. The features that are used to split the data at the top nodes are more important than those at the lower nodes.