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definition 1 let x xi be any k 1 random vector principal component analysis pca is a linear dimensionality reduction technique that can be utilized for extracting information from a high dimensional space by projecting it into a lower dimensional sub space it tries to preserve the essential parts that have more variation of the data and remove the non essential parts with fewer variation principal component analysis pca simplifies the complexity in high dimensional data while retaining trends and patterns it does this by transforming the data into fewer dimensions which act principal component analysis pca is a mathematical algorithm that reduces the dimensionality of the data while retaining most of the variation in the data set 1 it accomplishes this one of the techniques used to handle the curse of dimensionality in machine learning is principal component analysis pca typically having a sufficient amount of data enables us to create a more accurate prediction model since we have more data to use to train the computer but working with a huge data collection has its own drawbacks principal component analysis pca is a technique for reducing the dimensionality of such datasets increasing interpretability but at the same time minimizing information loss it does so by creating new uncorrelated variables that successively maximize variance what is principal component analysis the math behind pca how to calculate the principal components interpreting the results of pca principal component analysis in python visualizing pca results in r with ggplot2 and factoextra

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