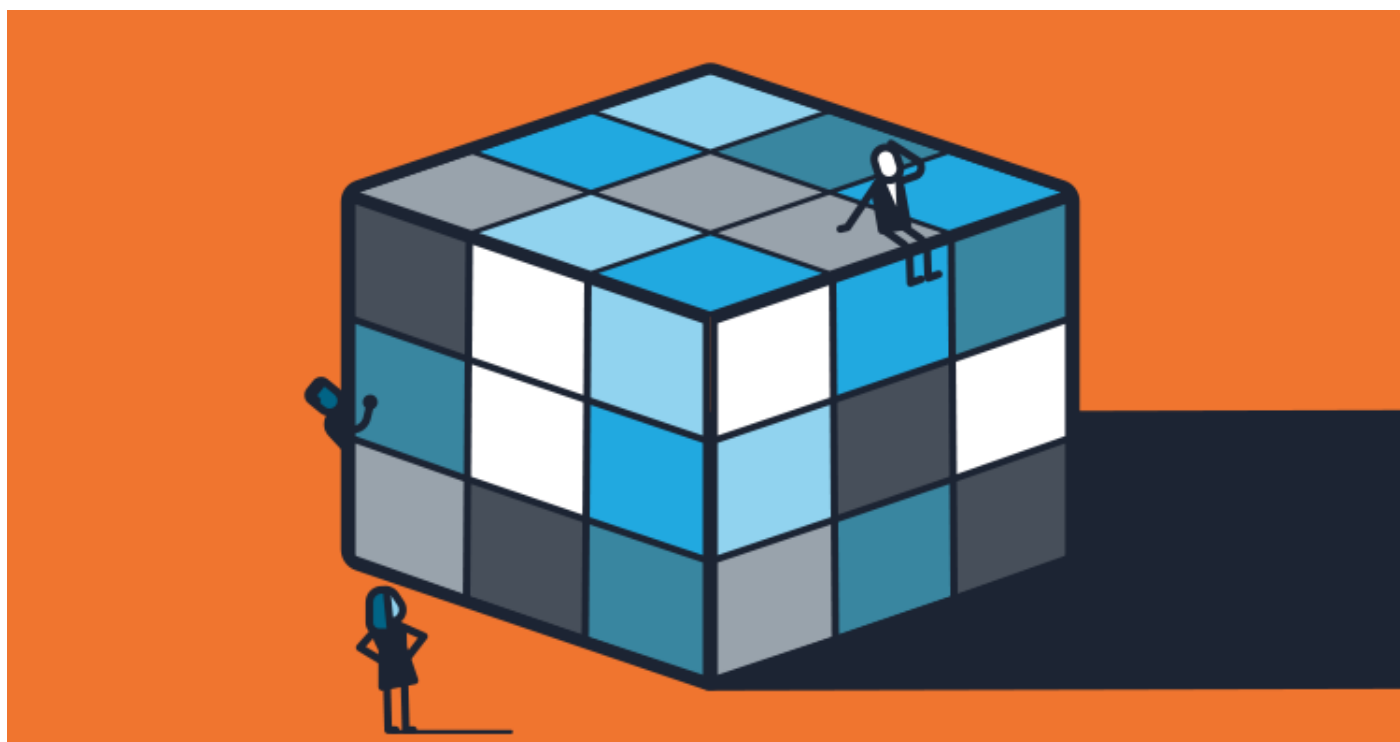


Common algorithms in marketing



Customer Data & Analytics Blog

Janet Wagner, on February 07, 2019 | 3 minute read



We recently published a [blog post](#) that highlights a number of open source libraries and tools data scientists in marketing should check out. Today we thought we would highlight several algorithms that are commonly used for marketing applications.

Decision Trees

[Decision trees](#) are supervised learning algorithms that can be used for both classification and regression. These algorithms use [tree representation](#) to

solve problems, and they work best on linear data that can be separated. The basic concept of decision trees is that the training data is divided into smaller datasets until each target variable falls under one category. Decision trees are commonly used for making predictions.

One of the marketing use cases for decision trees is predicting customer churn. Some marketing platforms use decision trees to apply a churn score to each customer, the score indicating the likeliness that the customer is about to churn. Urban Airship [used](#) gradient boosted decision trees to train a machine learning model to predict churn. A Microsoft Azure [article](#) recommends a multi-model approach for predicting churn. Among the algorithms used in the Azure Machine Learning prototype are boosted decision tree and logistic regression.

K-Means

[K-means](#) is an unsupervised learning algorithm that is a popular choice when it comes to [clustering](#). The algorithm finds clusters of data with similar attributes then creates distinct groups. Each group contains data points that are similar to each other, and the number of groups is represented by the variable K. You must specify the total number of clusters to be distributed.



In marketing, the k-means algorithm is commonly used for customer segmentation- grouping customers based on specific qualities such as demographics or behavioral patterns. Segmentation allows marketers to create highly personalized campaigns that target consumers at the right place at the right time. Ways that customers can be [segmented](#) include LifeStage, LifeStyle, and RFM.

Naive Bayes

[Naive Bayes](#) is a family of classification algorithms used for supervised learning models. Naive Bayes algorithms are probabilistic and can be trained easily, even with a small dataset. When given a set of features using probability, a Naive Bayes algorithm will predict a class. Once a probability model has been calculated from the training data, it is used to make predictions for new data using [Bayes Theorem](#). Naive Bayes algorithms all operate the same way- they assume that every feature is [independent](#) of each other given the class. In reality, it is rarely true that all the features of a model will be independent of each other. However, Naive Bayes works well for many tasks, even those where the assumption of independence is false.

Naive Bayes can be used for a variety of marketing use cases such as evaluating marketing campaigns, classifying marketing documents, and analyzing product pricing decisions. A recent Microsoft [article](#) explains how a Naive Bayes classifier algorithm and Microsoft Machine Learning Server were used to weed out fake marketing leads.

Many algorithms to choose from

K-means, decision trees, and Naive Bayes are just a few of the algorithms used in marketing. Other algorithms used for marketing applications include [linear regression](#), [logistic regression](#), and [k-nearest neighbors](#). Every

algorithm has its strengths and weaknesses. The only way to know for sure which algorithm will work best for your marketing use case is to try out different algorithms. And in many cases, several types of algorithms will be needed.

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