Model-based collaborative filtering techniques use the pure rating data to estimate or learn a model to make predictions [1]. That is, algorithms in this category take a probabilistic approach and envision the collaborative filtering process as computing the expected value of a user prediction, given his/her ratings on other items. Models are developed using data mining, machine learning algorithms to find patterns based on training data. These algorithms include Bayesian networks, clustering models, and rule-based approaches.

The Bayesian network model formulates a probabilistic model for collaborative filtering problem. The clustering model treats collaborative filtering as a classification problem and works by clustering similar users in same class and estimating the probability that a particular user is in a particular class C, and from there computes the conditional probability of ratings. The rule-based approach applies association rule discovery algorithms to find association between co-purchased items and then generates item recommendation based on the strength of the association between items [2].

[1] Wikipedia, 'Collaborative filtering', 2015. [Online]. Available: https://en.wikipedia.org/wiki/Collaborative\_filtering#Model-based. [Accessed: 14- Sep- 2015].

[2] Www10.org, 'Model-based Collaborative Filtering Algorithms.', 2015. [Online]. Available: http://www10.org/cdrom/papers/519/node8.html. [Accessed: 14- Sep- 2015].