

Recommendation Engine Performance Enhancement

Enhanced the performance of the recommendation engine of a leading movie rental client by 4%

SUMMARY

■ Client

A leading movie rental company *

■ Challenge

To enhance the performance of client's movie recommendation engine

■ Solution

Fractal's in-house algorithm based on singular value decomposition technique

■ Result

Achieved 4% improvement on existing recommendation engine and improved accuracy in movie rating predictions

* This case study is based on a Fractal client that has requested anonymity

■ The Solution

The Fractal team developed an algorithm based on the **'singular value decomposition' technique** and implemented in C++. It is an iterative algorithm which calculates each customer's preferences based on his ratings. Similarly, it also calculates each movie's characteristics based on the ratings that it has received. These preferences and characteristics are then used to predict a customer's rating for a movie that he has not yet watched. We do not need to use any external data such as genre or cast of the movie.

Using the available ratings, the algorithm finds out the values of about 150 features (attributes) for each customer and each movie. Each feature represents some characteristic such as action, comedy and so on. The value of a feature for a movie indicates the amount of content of that particular characteristic in the movie. Similarly, the value of a feature for a customer represents his liking towards that particular characteristic. These characteristics (action, thriller etc.) are not created by us, but they are automatically arrived at by the algorithm. Once we have all these features for a customer and a movie, we can just take the sum of products of these features to arrive at the customer's (predicted) rating for that movie.

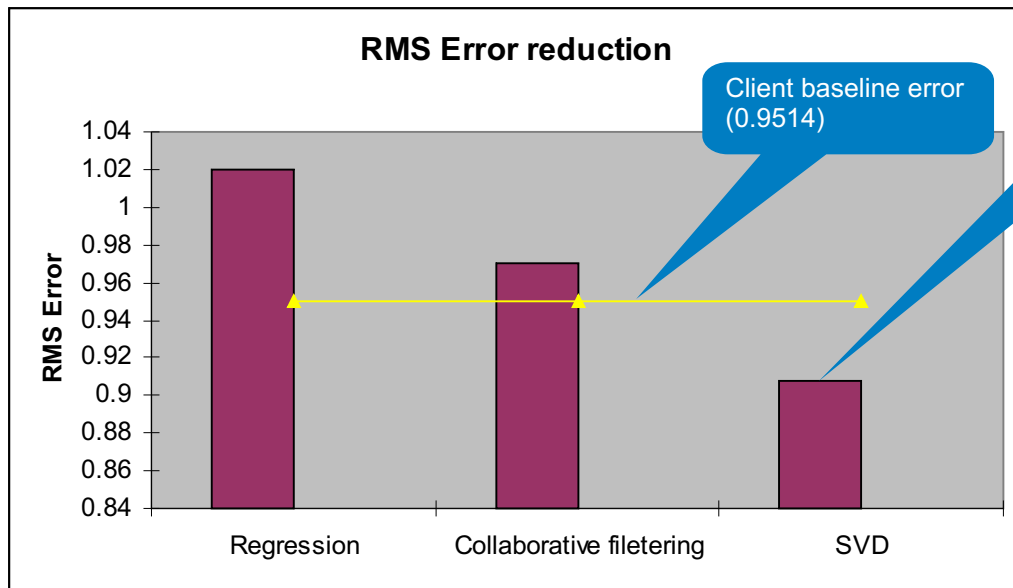
We also explored various other techniques such as linear regression, clustering, collaborative filtering, slope one method etc.

■ The Business challenge

Our client had an existing recommendation engine that recommended movies to customers based on their preferences. Our client wanted to enhance the performance of its recommendation engine and more accurately predict a customer's rating for every movie

■ Result

We were able to quantify the actual impacts caused by the various promotional activities in terms of incremental sales which varied from 10% to 30% for different activities. Based on the results of impact analysis, we were able to recommend the most effective promotion vehicle for the



RMS Error reduction through Singular value decomposition technique (0.9081)



INDIA

Fractal Analytics Ltd
Level 4, Corporate Enclave
B D Sawant Marg
Andheri, Mumbai 400099
Tel: +91 22 6704 2444 / 5
Fax: +91 22 6704 2446

SINGAPORE

Fractal Private Ltd
138 Cecil Street #03-02
Cecil Court
Singapore 069538
Tel: +65 6222 5101
Fax: +65 6222 5102

UNITED STATES

Fractal Analytics Inc
2500 Plaza Five
Jersey City, NJ 07311
Tel: 201 633 8728
Fax: 201 484 7201

➤ About Fractal

Fractal is a leading provider of customer analytics to consumer banks, credit card issuers, CPG companies and telecom companies. Fractal's analytical solutions have helped companies across the globe enhance profitability by powering their customer management efforts with scientific decision making.