FINTURE .ai

$1M NETFLIX PRIZE

Basic facts

NETFLIX

- Organizer: Netflix, 2006-2009
- Dataset: **100+ million** historical user-movie ratings collected from Netflix users
- Problem: automatically learn user preferences, in order to predict users' ratings for unseen movies and provide most accurate personalized recommendations
- Prize: **$1 million** for a ratings prediction algorithm outperforming the in-house Netflix system by 10%, as measured by RMSE of predictions
- State of the art: Netflix's *Cinematch* rolled out after several years of extensive research by Netflix R&D department
- *The most famous algorithmic competition ever*

Challenge

- Data records: only <movie ID>, <user ID>, <date>, <rating> … No metadata describing users or movies in any other, more detailed way

- Algorithms had to track and detect statistical patterns across multiple user-movie interactions, not knowing what particular movies actually contained

- The details of Netflix's Cinematch were kept confidential. Participants had to design their algorithms *from scratch*

-The contest lasted 3 years

Over 40,000 participating teams!

Solution

01
After first month solution got to the TOP-10 (highest rank: 6th), among 20,000 competitors at that time - OUTPERFORMING the original Netflix algorithm by 5%! Solution was designed independently and single-handedly from grounds up.

02
Simultaneously with some other participating teams, a brand new, universal algorithm for recommendation systems was invented: “Stochastic SVD” (Stochastic Singular Value Decomposition) as it is called today. Within this algorithm, a matrix factorization model designed specifically for recommendations is trained efficiently via gradient descent.

03
Additionally, a number of algorithm extensions tailored specifically to the Netflix Prize data was designed

04
Since Netflix Prize, Stochastic SVD has become a gold specifically to the Netflix Prize data was designed standard of collaborative filtering and nowadays it forms the foundation of large majority of modern recommender systems being deployed in real-world applications

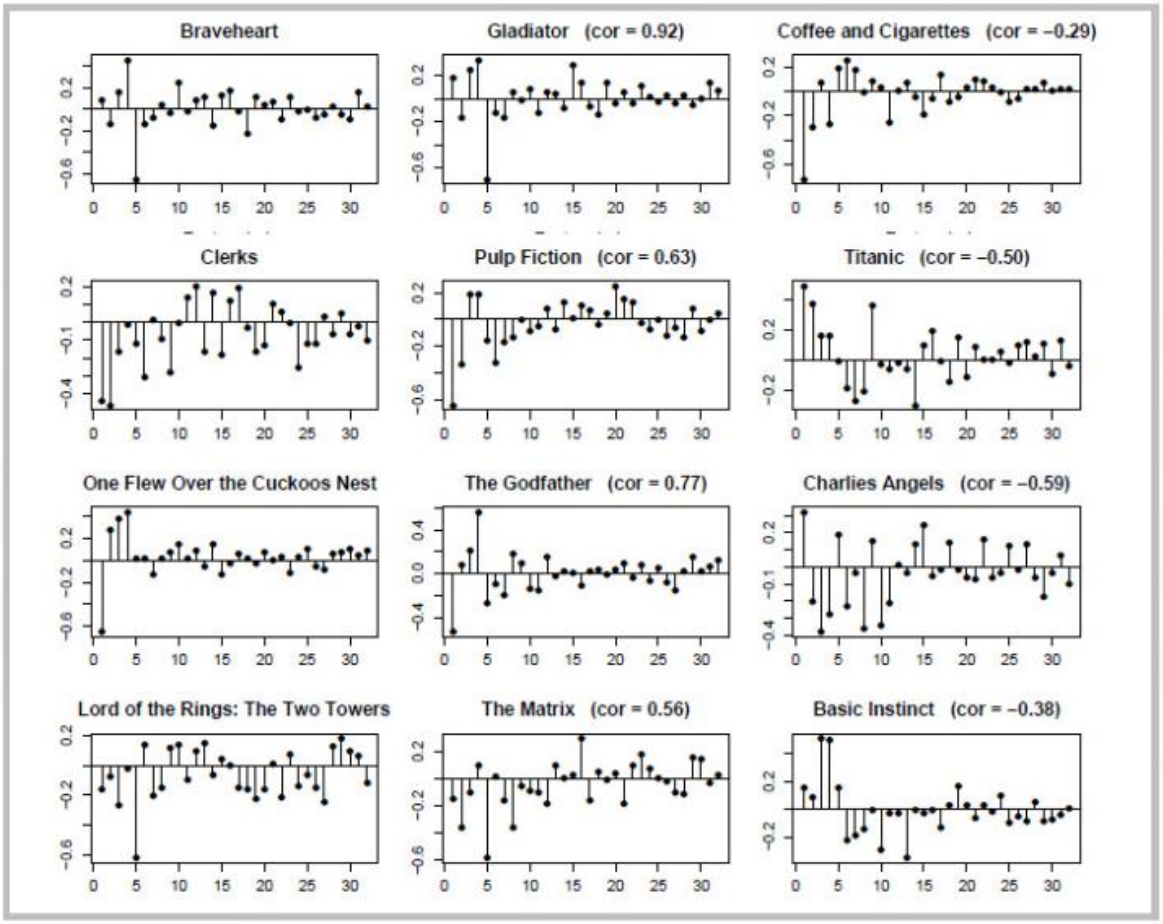
SVD MATRIX FACTORIZATION

	MOVIE 1	MOVIE 2	MOVIE 3	MOVIE 4	MOVIE 5
Comedy	3	1	1	3	1
Action	1	2	4	1	3

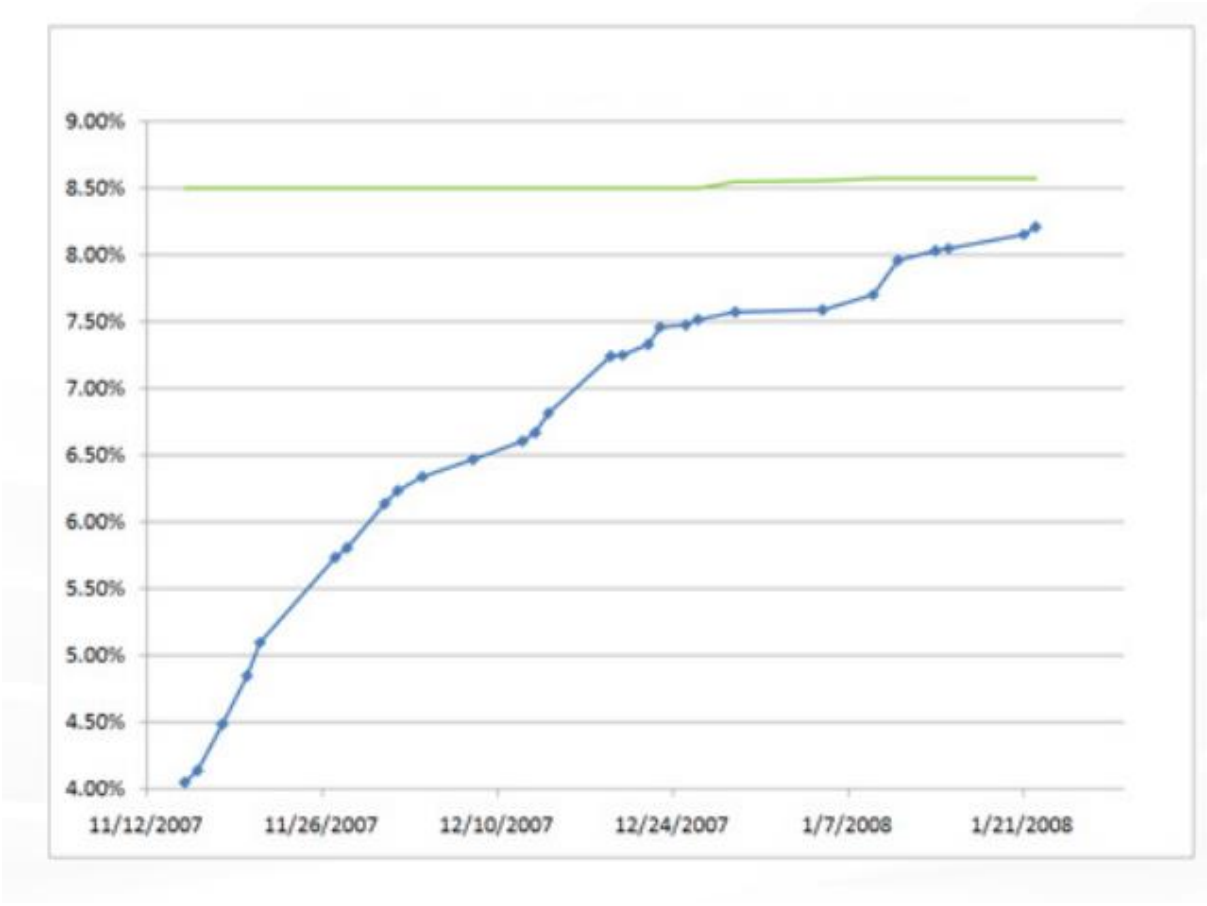
	Comedy	Action
A	✓	✗
B	✗	✓
C	✓	✗
D	✓	✓

	MOVIE 1	MOVIE 2	MOVIE 3	MOVIE 4	MOVIE 5
A	3	1	1	3	1
B	1	2	4	1	3
C	3	1	1	3	1
D	4	3	5	4	4

EXAMPLE SVD-LEARNED PROFILE



NETFLIX PRIZE PROGRESS



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