

MOVIE RECOMMENDATION SYSTEM

Spark Maschine Learning

AUFGABENSTELLUNG

- Movie Recommendation System basierend auf Filmdaten aus MovieLens
- Collaborative filtering mit **Alternating Least Squares**
- Apache Flink Machine Learning Library
 - Probleme mit Flink ML-Library und Java
 - **Stattdessen:** Apache Spark mit ML-Lib und Java
- Web-basierte Applikation



"Batman: The Dark Knight Returns, Part 2 (2013)"

The Batman has returned after a 10-year absence. The Gotham authorities want to arrest him. An old foe wants a reunion. The Feds want the Man of Tomorrow to put a stop to him.

★★★★★

View details

○○○○○●○○○

DID YOU ALREADY KNOW THESE MOVIES?



Metropolitan (1990)

Comedy

★★★★★

View details »



"Lady Vanishes, The (1938)"

Drama Mystery Thriller

★★★★★

View details »



Dead Calm (1989)

Thriller

★★★★★

View details »

BATMAN: THE DARK KNIGHT RETURNS, PART 2

IMDB INFORMATION

Title: Batman: The Dark Knight Returns, Part 2

Year: 2013

Rated: PG-13

Released: 29 Jan 2013

Runtime: 76 min

Genre: Animation, Action, Crime

Director: Jay Oliva

Writer: Bob Kane (character created by: Batman), Jerry Siegel (character created by: Superman), Joe Shuster (character created by: Superman), Frank Miller (comic book), Klaus Janson (comic book), Bob Goodman

Actors: Peter Weller, Ariel Winter, Michael Emerson, David Selby

Plot: The Batman has returned after a 10-year absence. The Gotham authorities want to arrest him. An old foe wants a reunion. The Feds want the Man of Tomorrow to put a stop to him.

Language: English

Country: USA

Awards: 1 win & 1 nomination.

Poster: [http://ia.media-](http://ia.media-imdb.com/images/M/MV5BMTQ1Mjk1NTY2NV5BMTI5BanBnXkFtZTgwMTA2MDEwNzE@._V1_SX300.jpg)

[imdb.com/images/M/MV5BMTQ1Mjk1NTY2NV5BMTI5BanBnXkFtZTgwMTA2MDEwNzE@._V1_SX300.jpg](http://ia.media-imdb.com/images/M/MV5BMTQ1Mjk1NTY2NV5BMTI5BanBnXkFtZTgwMTA2MDEwNzE@._V1_SX300.jpg)

Metascore: N/A

imdbRating: 8.4

imdbVotes: 28,681

imdbID: tt2166834

Type: movie

Response: True

[Close](#)

Metropolis (1990)

Comedy

[View details »](#)

"Lady Vanishes, The (1938)"

Drama Mystery Thriller

[View details »](#)

Dead Calm (1989)

Thriller

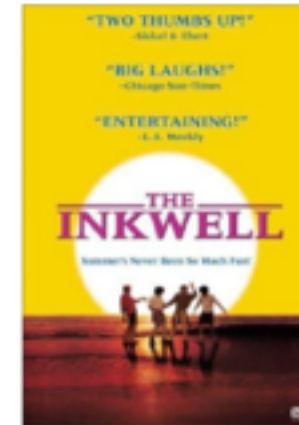
[View details »](#)

"Inkwell, The (1994)"

A shy, troubled young man who set his own house on fire and has an imaginary friend, is sent to a vineyard where he finds himself in the middle of his political-arguing, party-loving family and his love torn between two girls. [View details »](#)

Comedy Drama

your rating: ★☆☆☆☆



Marie from the Bay of Angels (Marie Baie Des Anges) (1997)

A random montage of disturbing images tell a story about one summer in the lives of two teenagers who somehow find love within each other, Orso and Marie. After they realize this, they run ...

[View details »](#)

Drama

your rating: ★☆☆☆☆

House of Wax (1953)

An associate burns down a wax museum with the owner inside, but he survives only to become vengeful and murderous. [View details »](#)

Crime Horror Mystery Thriller

your rating: ★☆☆☆☆



"Dolce Vita, La (1960)"



Indian Summer (a.k.a. Alive & Kicking) (1996)

Comedy Drama



[View details »](#)



"Cabinet of Dr. Caligari, The (Cabinet des Dr. Caligari., Das) (1920)"

Crime Fantasy Horror



[View details »](#)



Chicken Little (2005)

Action Adventure Animation Children Comedy

Sci-Fi



[View details »](#)



"Forbidden Kingdom, The (2008)"

Action Adventure Comedy Fantasy



[View details »](#)



Scott Pilgrim vs. the World (2010)

Action Comedy Fantasy Musical Romance



[View details »](#)



RoboCop (2014)

Action Crime Sci-Fi IMAX



[View details »](#)

RATE SOME MOVIES TO GET RECOMMENDATIONS

Rate now!

1) SELECT A GENRE TO GET RECOMMENDATIONS

Film-Noir

Action

Adventure

Horror

Romance

War

Western

Documentary

Sci-Fi

Drama

Thriller

(no genres listed)

Crime

Fantasy

Animation

IMAX

Comedy

Mystery

Children

Musical

2) NOW RATE SOME MOVIES TO GET RECOMMENDATIONS

Rate now!

1) SELECT A C

Film-Noir

A

Crime

Fanta

2) NOW RATE

Rate now!

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Sleepaway Camp (1983)

Angela Baker, a traumatized and very shy young girl, is sent to summer camp with her cousin. Shortly after her arrival, anyone with sinister or less than honorable intentions gets their comeuppance.

[View details »](#)

Horror

your rating: ★☆☆☆☆



Vamp (1986)

Two fraternity pledges go to a sleazy bar looking for strippers to entertain their college friends. They have problems with transportation, Biker gangs, and worst of all, the staff of the ...

[View details »](#)

Comedy Horror

your rating: ★☆☆☆☆

Dr. Jekyll and Mr. Hyde (1931)

Dr. Jekyll faces horrible consequences when he lets his dark side run wild with a potion that transforms him into the animalistic Mr. Hyde.

[View details »](#)

Drama Horror

your rating: ★☆☆☆☆



Snakes on a Plane (2006)

An FBI agent takes on a plane full of deadly and venomous snakes, deliberately released to kill a witness being flown from Honolulu to Los Angeles to testify against a mob boss. [View details »](#)

[Back to top](#)



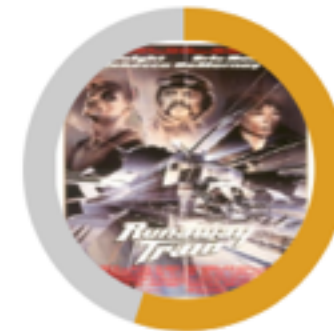
Chungking Express
(Chung Hing sam lam)
(1994)

Drama Mystery Romance
★★★★☆ View details »



Deconstructing Harry
(1997)

Comedy Drama
★★★★☆ View details »



Runaway Train (1985)

Action Adventure Drama Thriller
★★★★☆ View details »



"Mission, The (1986)"

Drama
★★★★☆ View details »



Tell No One (Ne le dis à
personne) (2006)

Crime Drama Mystery Thriller
★★★★☆ View details »



V/H/S (2012)

Horror Thriller
★★★★☆ View details »

1) SELECT A GENRE TO GET RECOMMENDATIONS

- Film-Noir Action Adventure **Horror** Romance War Western Documentary Sci-Fi Drama Thriller (no genres listed)
Crime Fantasy Animation IMAX Comedy Mystery Children Musical

WOHER KOMMEN DIE DATEN?

- **MovieLens (Filme, Bewertung)**

Small:

100,000 ratings and 6,100 tag applications applied to 10,000 movies by 700 users. Last updated 1/2016.

Full:

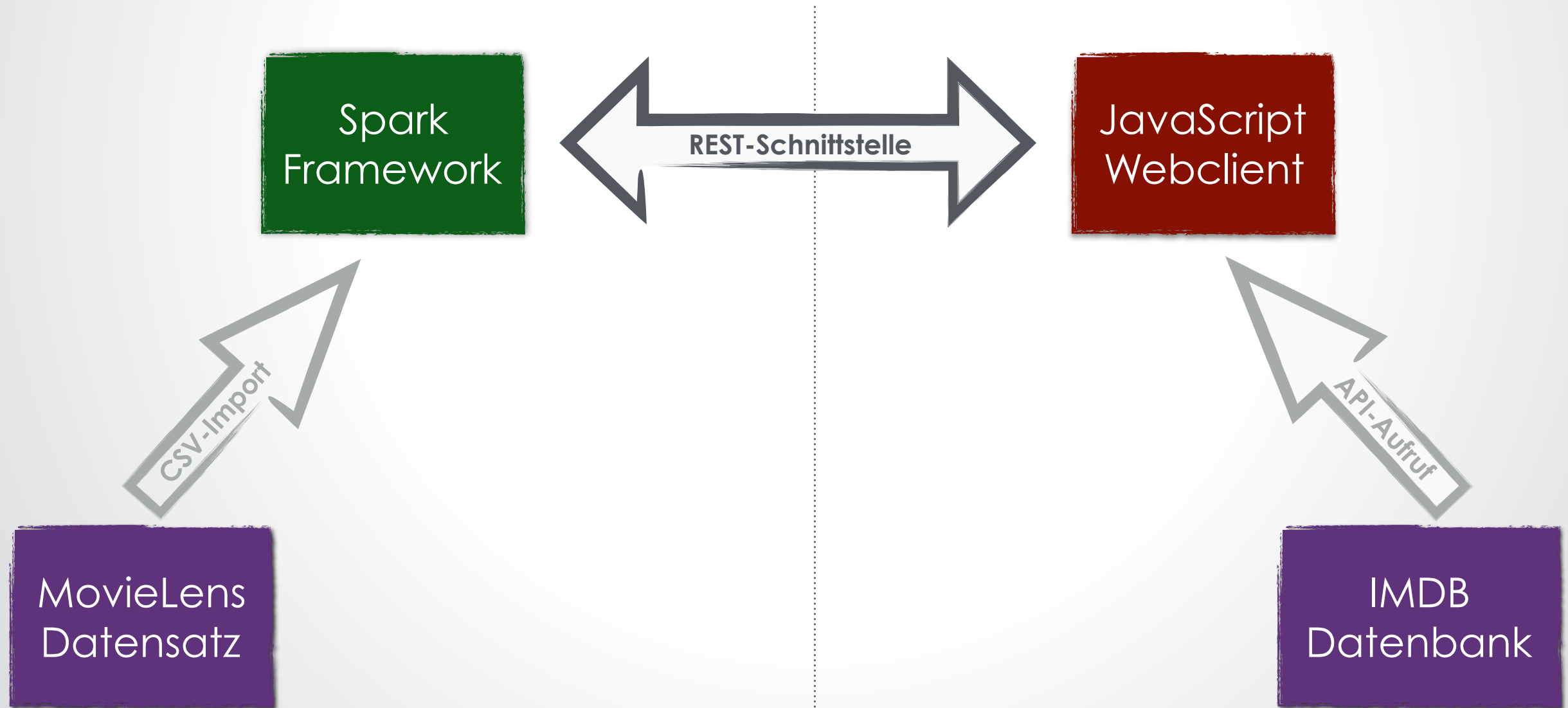
22,000,000 ratings and 580,000 tag applications applied to 33,000 movies by 240,000 users. Last updated 1/2016.

- **IMDB (zusätzliche Filminformationen)**

WAS PASSIERT MIT DEN DATEN?

SERVER

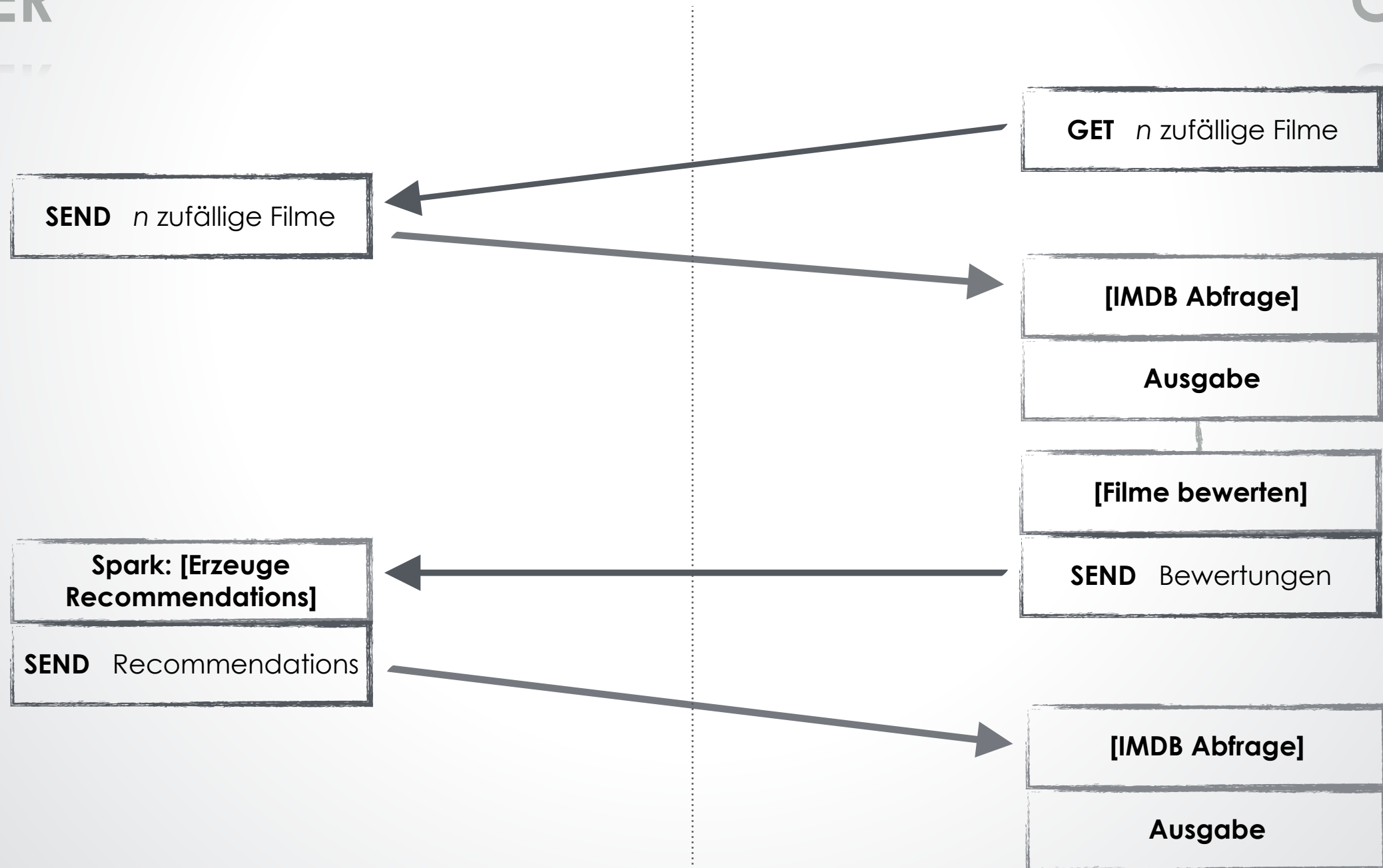
CLIENT



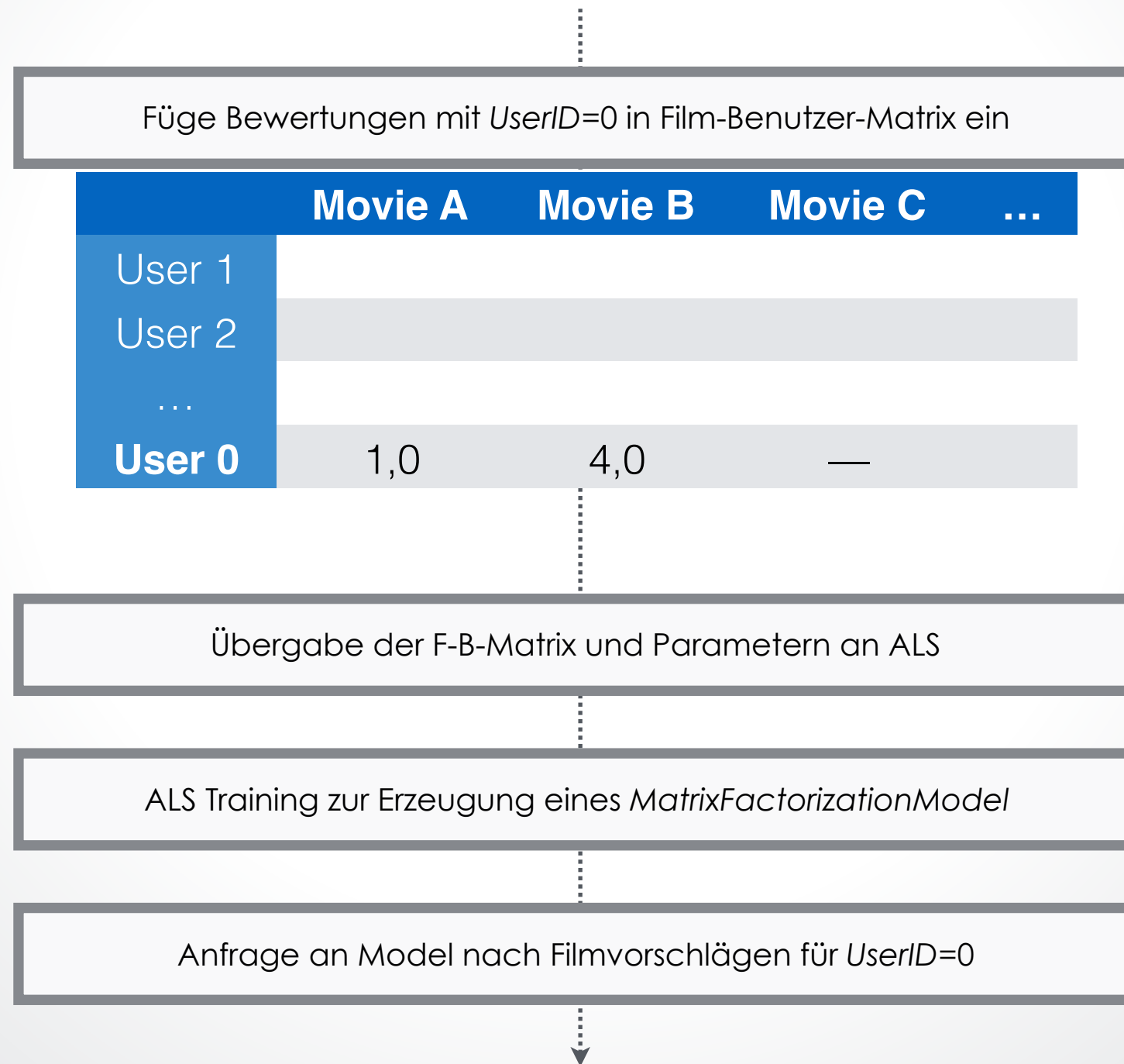
WIE WERDEN RECOMMENDATIONS ERZEUGT?

SERVER

CLIENT

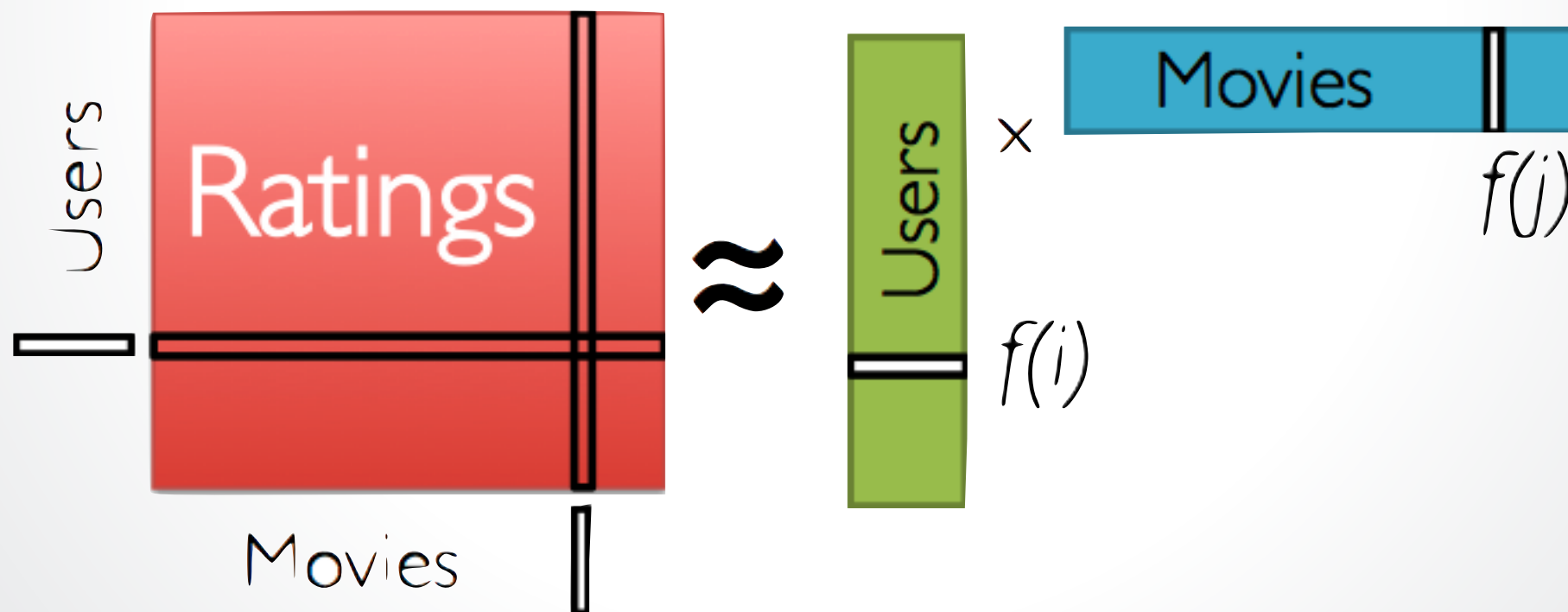


ÜBERSICHT SPARK/ALS



COLLABORATIVE FILTERING

Low-Rank Matrix Factorization:



LAUFZEITANALYSE

	ml-latest-small 1 Stern Bewertung	ml-latest-small 5 Sterne Bewertung	ml-latest 5 Sterne Bewertung
1 Core	12,986	13,048	520,255
2 Cores	17,288	16,255	367,254
3 Cores	27,456	26,448	417,246

Live-Demo