

# *Recomendação de filmes*

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# *Problema*

# *Proposto*

Selecionar itens personalizados com base em:

- Interesse dos usuários
- Contexto de cada usuário



*DataSet*

*MovieLens*

# Movies e

# Ratings

ratings

userId	movieId	rating	timestamp
1	1	4.0	964982703
1	3	4.0	964981247
1	6	4.0	964982224
1	47	5.0	964983815
1	50	5.0	964982931
1	70	3.0	964982400
1	101	5.0	964980868
1	110	4.0	964982176
1	151	5.0	964984041
1	157	5.0	964984100
1	163	5.0	964983650
1	216	5.0	964981208

movies

movieId	title	genres
1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy
2	Jumanji (1995)	Adventure Children Fantasy
3	Grumpier Old Men (1995)	Comedy Romance
4	Waiting to Exhale (1995)	Comedy Drama Romance
5	Father of the Bride Part II (1995)	Comedy
6	Heat (1995)	Action Crime Thriller
7	Sabrina (1995)	Comedy Romance
8	Tom and Huck (1995)	Adventure Children
9	Sudden Death (1995)	Action
10	GoldenEye (1995)	Action Adventure Thriller
11	American President, The (1995)	Comedy Drama Romance
12	Dracula: Dead and Loving It (1995)	Comedy Horror
13	Balto (1995)	Adventure Animation Children
14	Nixon (1995)	Drama
15	Cutthroat Island (1995)	Action Adventure Romance
16	Casino (1995)	Crime Drama
17	Sense and Sensibility (1995)	Drama Romance
18	Four Rooms (1995)	Comedy
19	Ace Ventura: When Nature Calls (1995)	Comedy
20	Money Train (1995)	Action Comedy Crime Drama Thriller
21	Get Shorty (1995)	Comedy Crime Thriller
22	Copycat (1995)	Crime Drama Horror Mystery Thriller

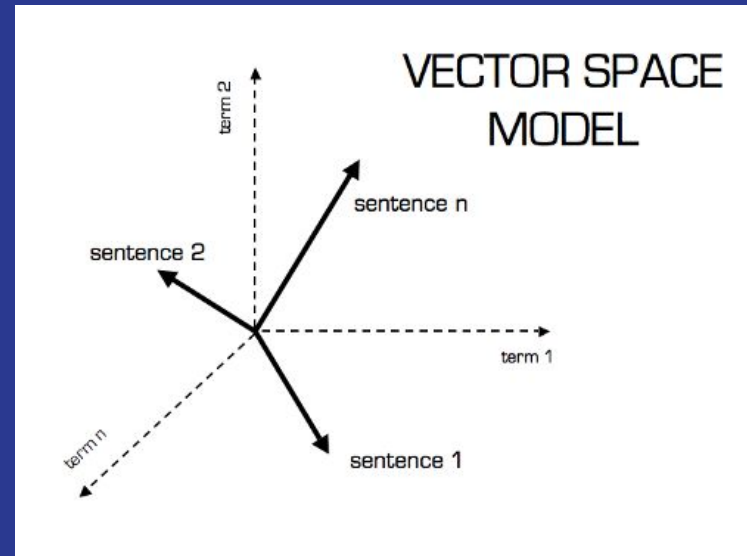


*Técnicas*

*de Resolução*

# Baseado em conteúdo

- Similaridade entre filmes
- Cosseno



Retirado de <https://bit.ly/2TrYco3>

```
#Testando a validade do recomendador com sequels
```

```
print(genre_recommendations('Free Willy (1993)').head(5)) #aventura, infantil, drama
```

```
print(genre_recommendations('Free Willy 2: The Adventure Home (1995)').head(5)) #aventura, infantil, drama
```



```
365      Black Beauty (1994)
396      Free Willy (1993)
498      Andre (1994)
773      Homeward Bound: The Incredible Journey (1993)
1170     Buddy (1997)
```

```
Name: title, dtype: object
```

```
365      Black Beauty (1994)
396      Free Willy (1993)
498      Andre (1994)
773      Homeward Bound: The Incredible Journey (1993)
1170     Buddy (1997)
```

```
Name: title, dtype: object
```

```
print(genre_recommendations('Shining, The (1980)').head(5)) #terror
```

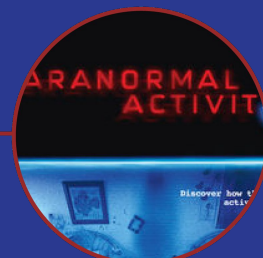
```
print(genre_recommendations('Paranormal Activity 3 (2011)').head(5)) #terror
```

```
188      Castle Freak (1995)
593      Cemetery Man (Dellamorte Dellamore) (1994)
653      Eyes Without a Face (Yeux sans visage, Les) (1...
842      Children of the Corn IV: The Gathering (1996)
857      Fog, The (1980)
```

```
Name: title, dtype: object
```

```
188      Castle Freak (1995)
593      Cemetery Man (Dellamorte Dellamore) (1994)
653      Eyes Without a Face (Yeux sans visage, Les) (1...
842      Children of the Corn IV: The Gathering (1996)
857      Fog, The (1980)
```

```
Name: title, dtype: object
```



*Fatorização*

*Matricial*



# Contexto

## Netflix Universe



Ana



Betty



Carlos



Dana



Movie 1



Movie 2



Movie 3



Movie 4



Movie 5


	M 1	M 2	M 3	M 4	M 5
Ana	3	1	1	3	1
Betty	1	2	4	1	3
Carlos	3	1	1	3	1
Dana	4	3	5	4	4

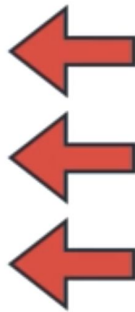
# Informações

	M1	M2	M3	M4	M5
					
	1	2	4	1	3
	3	1	1	3	1
	4	3	5	4	4



$$\begin{matrix} \text{B} \\ \text{Woman with brown hair} \end{matrix} + \begin{matrix} \text{C} \\ \text{Man with dark skin} \end{matrix} = \begin{matrix} \text{D} \\ \text{Woman with blonde hair} \end{matrix}$$




	M1	M2	M3	M4	M5
					
	1	2	4	1	3
	3	1	1	3	1
	4	3	5	4	4



I love action movies!

I love comedy!

I **love** action and comedy movies!




 $+$ 

 $=$ 







B C D







# Objetivo

## Matrix Factorization

	M1	M2	M3	M4	M5
 Comedy	3	1	1	3	1
 Action	1	2	4	1	3

	 Comedy	 Action
 A		
 B		
 C		
 D		

	M1	M2	M3	M4	M5
	3	1	1	3	1
	1	2	4	1	3
	3	1	1	3	1
	4	3	5	4	4

# Vida Real

	M1	M2	M3	M4	M5
A	3		1		1
B	1		4	1	
C	3	1		3	1
D		3		4	4

# Objetivo





	M1	M2	M3	M4	M5
F1	3	1	1	3	1
F2	1	2	4	1	3




	F1	F2
A	1	0
B	0	1
C	1	0
D	1	1

	M1	M2	M3	M4	M5
A	3		1		1
B	1		4	1	
C	3	1		3	1
D		3		4	4

# Predição

	M1	M2	M3	M4	M5
F1	3	1	1	3	1
F2	1	2	4	1	3

	F1	F2
 A	1	0
 B	0	1
 C	1	0
 D	1	1

	M1	M2	M3	M4	M5
 A	3	1	1	3	1
 B	1	2	4	1	3
 C	3	1	1	3	1
 D	4	3	5	4	4

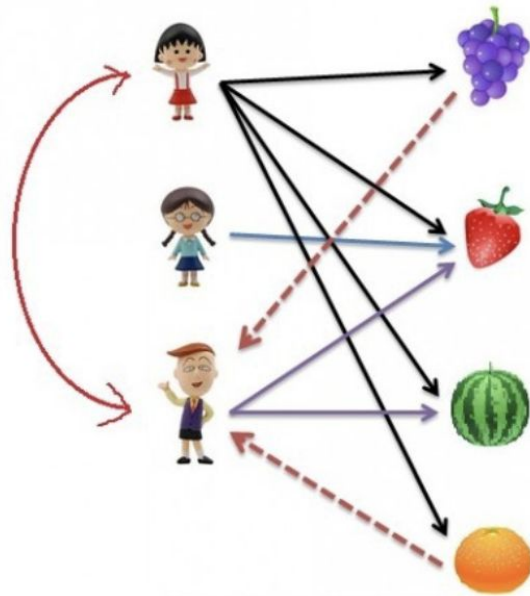


# *Filtragem*

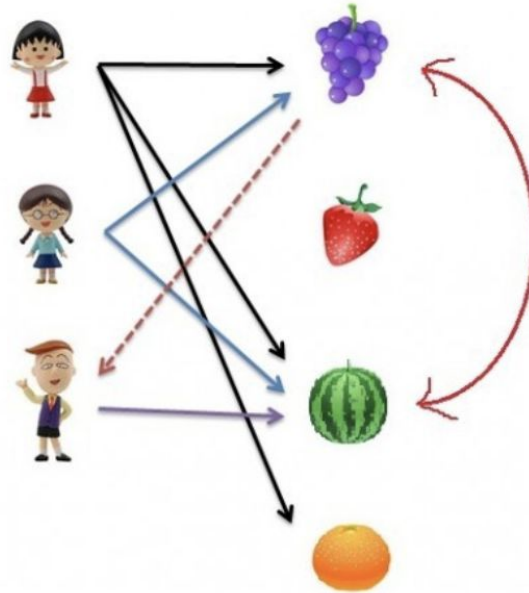
# *Colaborativa*

- Tipos: Filtragem por item ou usuário
- Correlação entre itens
- Predição da avaliação

# Esquema



User-based filtering



Item-based filtering

# *Regressão*

# *Linear*

- Seleção das características que irão basear a avaliação
- Prever a avaliação de um usuário sobre os filmes

*Agradecemos  
a atenção!*