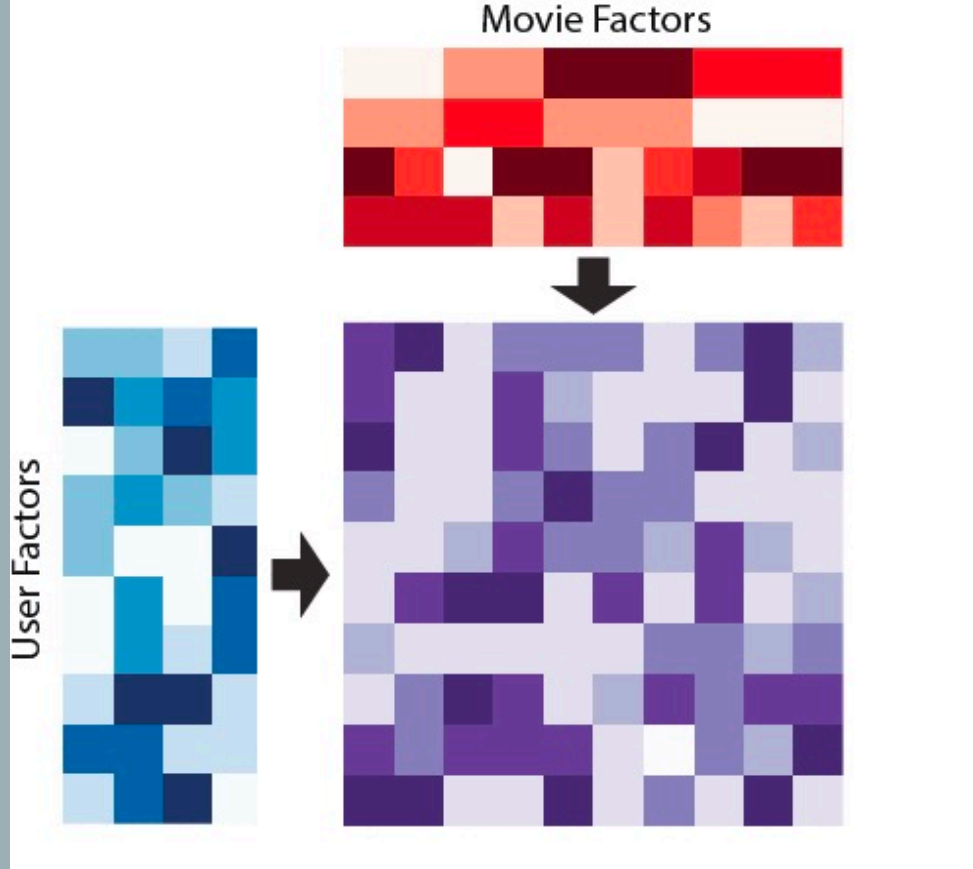


MATRIX FACTORING

RECOMMENDATION SYSTEMS

- Collaboration
 - Assignment 5, the last part of the book recommendation we coded
- Popular
 - Assignment 5, finding the book most liked/ most read
- Cold start
 - New users and new sites
- Matrix Factoring



		Book				
		1	0	1		
User	2 – Sci-fi	3 – favorite author	4.5 - written in first person			
				Rating	6.5	

Book1			
1 – Sci-fi	0 – Isaac Asimov	1 – written in first person	1 – multiple point of view
0 - fantasy	1 – female lead	0 - comedic	0 - biography
	1 - murder mystery	0 - YA	1 – horror

User1	2 – Sci-Fi	3 – Isaac Asimov	4.5 - written in first person	-2 – multiple points of view
User2	-3 – fantasy	2.5 – female lead	2 – comedic	3 - biography
User3	-2.5 - comedic	3.5 - Murder mystery	-2 –multiple points of view	4 - horror

Ratings
4.5
2.5
5.5

- New Class for users containing user's name to help keep track of users

- list of factors and list of user ratings to those factors

- New file that would look similar to ratings.csv - like cars.csv

- New file for book factors (in terms of 1's and 0's)

- Use np.dot to compare rating factors for similarities – rating factors that appear more will be more accurate on rating estimation

```
class Book:  
    def __init__(self,author,title):  
        self.title = title  
        self.author = author
```

```
Ben,5,0,0,0,0,0,0,1,0,1,-3,5,0,0,0,5,5,0,0,0,0,5,0,0,0,0,0,0,0,  
Moose,5,5,0,0,0,0,3,0,0,1,0,5,3,0,5,0,3,3,5,0,0,0,0,5,0,0,0,0,  
Reuven,5,-5,0,0,0,0,-3,-5,0,1,-5,5,0,1,0,1,-3,1,-5,0,0,0,0,0,0,  
Cust1,3,3,5,0,0,0,3,0,0,3,0,3,0,0,0,0,3,0,5,0,0,0,1,3,1,0,0,0,  
Cust2,3,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,  
Francois,3,3,5,0,0,0,3,0,0,3,0,3,0,0,0,0,0,3,0,5,0,0,0,1,3,1,0,  
Jim,5,3,0,0,0,0,3,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,3,0,3,0,0,0,  
Iren,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,5,0,  
Cust3,0,0,0,-3,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,5,  
Cust4,0,0,0,0,0,0,0,5,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,  
Cust5,0,-3,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,3,0,0,  
Cust6,1,1,3,3,-3,3,3,5,5,5,5,1,3,1,1,0,5,0,3,0,0,0,0,0,0,0,0,0,
```

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