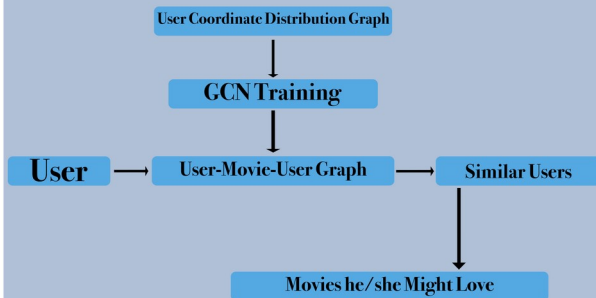


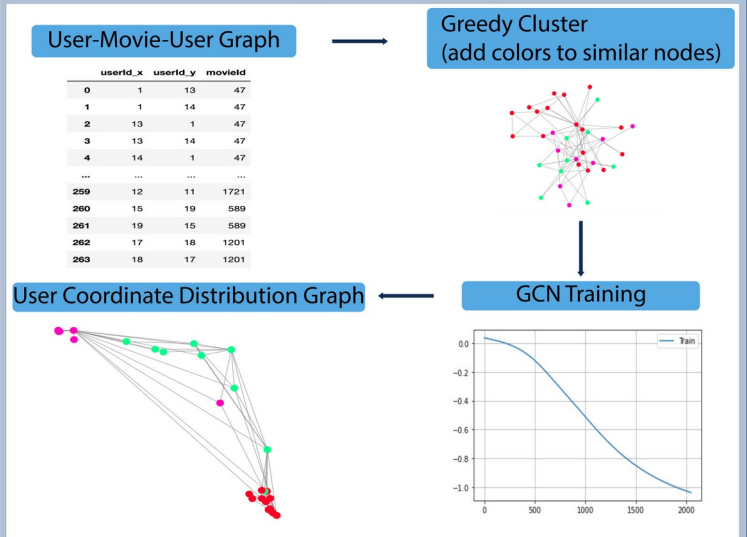
Introduction

A movie recommendation system based on GCN (graph convolutional network)



Methods(GCN)

Training and Testing:



Datasets

User-Movie

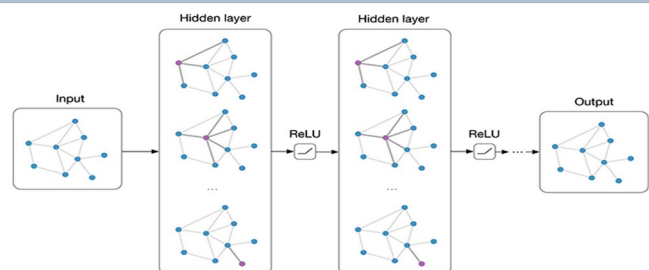
userid	movieid	rating	timestamp
0	1	1	4.0
1	1	3	4.0
2	1	6	4.0
3	1	47	5.0
4	1	50	5.0
...
100831	610	166534	4.0
100832	610	168248	5.0
100833	610	168250	5.0
100834	610	168252	5.0
100835	610	170875	3.0

User-User Relation table:

userid_x	userid_y	movieid
0	1	13
1	1	14
2	13	1
3	13	14
4	14	1
...
259	12	11
260	15	19
261	19	15
262	17	18
263	18	17

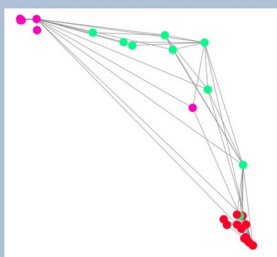
1. Filter: rating == 5
 2. Merge: find users share the same 5-rating movies
- Then generate graph by adding edges between users according to User-User Table

GCN(Graph Convolutional Network):



Results & Conclusion

GCN Training Output:
(User Coordinate Distribution Graph)



User-User distance table:

UserID	Distance
0	16.0 0.005723
1	14.0 0.005902
2	5.0 0.020273
3	17.0 0.027609
4	3.0 0.028828
5	7.0 0.028834

Movies Recommendation Output:

userid	movieid	rating	title	genres
0	17	280	Star Wars: Episode IV - A New Hope (1977)	Action/Adventure/Sci-Fi
1	17	296	Pulp Fiction (1994)	Comedy/Crime/Drama/Thriller
2	17	318	Shawshank Redemption, The (1994)	Crime/Drama
3	17	306	Forrest Gump (1994)	Comedy/Drama/Romance/War
4	17	856	GoodFellas, The (1975)	Crime/Drama
5	17	1196	Star Wars: Episode V - The Empire Strikes Back...	Action/Adventure/Sci-Fi
6	17	1201	Good, the Bad and the Ugly, The (Buono, il br...	Action/Adventure/Western
7	17	1206	Clockwork Orange, A (1971)	Crime/Drama/Sci-Fi/Thriller
8	17	1210	Star Wars: Episode VI - Return of the Jedi (1983)	Action/Adventure/Sci-Fi
9	17	1240	Terminator, The (1984)	Action/Sci-Fi/Thriller
10	17	1732	Big Lebowski, The (1998)	Comedy/Crime
11	17	2571	Matrix, The (1999)	Action/Sci-Fi/Thriller
12	17	5618	Spirited Away (Sen to Chihiro no kamikakushi) ...	Adventure/Animation/Fantasy
13	17	5652	Lord of the Rings: The Two Towers, The (2002)	Adventure/Fantasy
14	17	6050	Laputa: Castle in the Sky (Tenkû no shiro Rapy...	Action/Adventure/Animation/Children/Fantasy/Sci...
15	17	7099	Nausicaä of the Valley of the Wind (Kaze no ta...	Adventure/Animation/Drama/Fantasy/Sci-Fi

Nodes with same color are separated into the same cluster

Select user with the smallest distance as similar user. Recommend his/her favorite movies.