

ML ASSIGNMENT 2

1.0.1 Movie suggestion using KNN Algorithm Importing Libraries.

```
[1]: import pandas as pd
      from scipy.sparse import csr_matrix
      from sklearn.neighbors import NearestNeighbors
      from fuzzywuzzy import process
```

```
[2]: movies='ML_Lab/movies.csv'
      ratings='ML_Lab/ratings.csv'

      df_movies=pd.read_csv(movies, usecols=['movieId','title'], dtype={'movieId':
      ,> 'int32','title':'str'})
      df_ratings=pd.read_csv(ratings,
      ,> usecols=['userId','movieId','rating'],dtype={'userId':'int32','movieId':
      ,> 'int32','rating':'float32'})
```

```
[3]: #Sparse Matrix
      #      Users
      #      [4,4,5] A
      #Movies [3,3,4] B == Cos(A,B) => 0.95
      #      [3,2,1]

      movies_users=df_ratings.pivot(index='movieId',
      ,> columns='userId',values='rating').fillna(0)
      mat_movies_users=csr_matrix(movies_users.values)
```

```
[4]: # Euclidean Distance
      # Manhattan Distance
      # Minkowski Distance
```

```
# Cosine Similarity
model_knn= NearestNeighbors(metric='cosine', algorithm='brute', n_neighbors=20)
```

```
[5]: model_knn.fit(mat_movies_users)
```

```
[5]: NearestNeighbors(algorithm='brute', leaf_size=30, metric='cosine',
                      metric_params=None, n_jobs=None, n_neighbors=20, p=2,
                      radius=1.0)
```

```
[6]: # Recommender(movie_name) => List of Movies recommended

def recommender(movie_name, data,model, n_recommendations
): model.fit(data) idx=process.extractOne(movie_name,
df_movies['title'])[2] print('Movie Selected:
',df_movies['title'][idx], 'Index: ',idx)
print('Searching for recommendations.....') distances,
indices=model.kneighbors(data[idx],
n_neighbors=n_recommendation
s) for i in indices:
    print(df_movies['title'][i].where(i!=idx))

recommender('iron man', mat_movies_users, model_knn,20)
```

```
Movie Selected: Iron Man (2008) Index: 6743
Searching for recommendations...
6743                               NaN
7197                               Garage (2007)
7195 Merry Madagascar (2009) 7354 A-Team,
The (2010) 6726 Superhero Movie (2008)
7137                               Thirst (Bakjwi) (2009)
7026                               Scorpio (1973)
7571                               Win Win (2011)
3880                               Look Who's Talking Now (1993)
6388 After the Wedding (Efter brylluppet) (2006)
7601                               Idiots and Angels (2008)
6755                               Nina's Heavenly Delights (2006)
7022                               Earth (2007)
7338                               Blue Valentine (2010)
4421                               What's Up, Doc? (1972)
6195                               Silent Hill (2006)
5885                               Crash (2004)
3740                               Motel Hell (1980)
7378 Serbian Film, A (Srpski film) (2010)
7289                               Generation X (1996)
Name: title, dtype: object
```