C2-T08-15888

School of Computer Sciences, USM
Semester II, 2020/2021
CDS513: Predictive Business Analytics

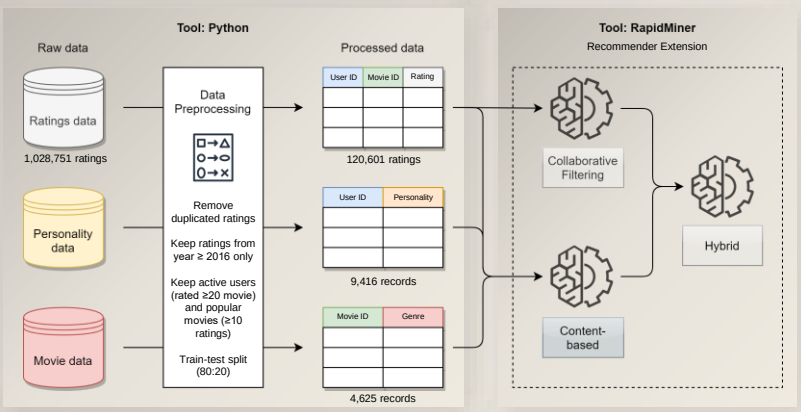
# C2_TOPIC 8:
# Movie Recommender System based on User Personality and Movie Genre

## Intro & Problem Background

Growth of digital data has changed human lifestyles, including how they spend their leisure time, e.g., watching movies. Humans' life becomes more convenient, but this is accompanied by information overload – users are stressed for not being able to process information quickly. Movie recommendation system can help to improve the quality of user decision making on the online movie streaming services. In this assignment, various approaches of recommender systems are implemented using the data of user's movie ratings, user personality trait, and movie genre.

## Recommender Systems

**Tools:** Python (v3.8.3) + RapidMiner (v9.9)




**Datasets: [T08]** Personality 2018 (ratings & user personality) + MovieLens 25M (movie genre)

**Collaborative Filtering (CF):**
- User-to-User (ratings)
- Item-to-Item (ratings)
- Context-aware (ratings + days of week: weekdays or weekends)

**Content-based:**
- User Attribute-based (ratings + user personality)
- Item Attribute-based (ratings + movie genre)

**Hybrid:**
- User-to-User CF + User Attribute-based
- Item-to-Item CF + Item Attribute-based

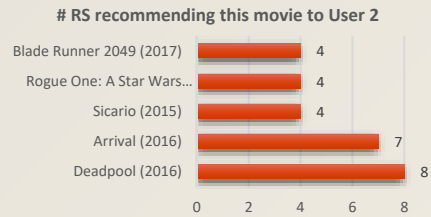
## Experiment and Analysis

**Evaluation metrics:**
AUC, MAP, and Prec@N (N=5, 10, 15).

**Analysis:**
List of frequently recommended top 5 movies by the 10 RS to 2 selected users.

| No | Recommender system | Parameters |
|---|---|---|
| Model 1 | Weighted User-to-User CF RS | User k-NN: k=60; Weighted k-NN |
| Model 2 | Weighted Item-to-Item CF RS | Item k-NN: k=40; Weighted k-NN |
| Model 3 | Weighted User-to-User CARS | User k-NN: k=60; Weighted k-NN; Weekdays = 1 (Mon-Fri) |
| Model 4 | Weighted User-to-User CARS | User k-NN: k=100; Weighted k-NN; Weekdays = 2 (Sun) |
| Model 5 | Weighted Item-to-Item CARS | Item k-NN: k=60; Weighted k-NN; Weekdays = 1 (Mon-Fri) |
| Model 6 | Weighted Item-to-Item CARS | Item k-NN: k=20; Weighted k-NN; Weeidays = 2 (Sun) |
| Model 7 | User Attribute-Based RS | User Attribute k-NN: k=100 |
| Model 8 | Item Attribute-Based RS | Item Attribute k-NN: k=40 |
| Model 9 | Hybrid RS 1 | No 2 + No 8 |
| Model 10 | Hybrid RS 2 | No 1 + No 7 |






User 1: 00fa91e202f5e48aa34c05d97867fa74

User 2: 022047320a00d607009323875a19face

**Discussions:** Movie recommender systems can recommend movies to users based on the various features and attributes, such as ratings, user (personality) and item (movie genre) attributes. User personality is more reliable than movie genres in content-based movie recommendations. Weighted CF RS and Hybrid RS perform well in the movie recommendation tasks.