

Item-Based CF Instructions

Overview

This assignment will explore item-based collaborative filtering. As with the Module 2 Assignment, you will be given a 20x20 matrix where columns represent movies, rows represent users, and each cell represents a user-movie rating.

- [Assignment 5.xls](#)
- [Assignment 5.xlsx](#)
- [Assignment 5.ods](#)

Spreadsheet Layout

In the spreadsheet, you will find 4 sheets: Ratings contains the raw rating data, and NormRatings contains the normalized ratings (each rating adjusted with the user's mean rating). You will fill out Matrix with the similarities between all items, and FilterMatrix is a filtered view of Matrix where all negative similarities are clamped to 0 (to exclude negative similarities from the computation).

The Ratings and NormRatings sheets also contain the L2 norm (Euclidean length, or square root of sum of squares) of each movie's ratings.

For each similarity variant, you will fill out the Matrix sheet; use the FilterMatrix sheet to compute recommendations.

Similarity Functions

Your core task in this assignment is to compute item similarities using 2 different similarity functions:

- Cosine similarity between items using raw (unnormalized) ratings.
- Cosine similarity using adjusted (normalized) ratings.

For the numerator of the similarity, you will probably want to use the SUMPRODUCT function; the provided L2 norms will be useful for computing the denominators.

Deliverables

The output you are supposed to turn in consists of 2 parts. For each part, submit both unnormalized and normalized results.

Top 5 Toy Story

Provide 5 movies most similar to Toy Story, in decreasing order of similarity. Only provide the movie ID, not the title.

Top 5 for User 5277

Provide the top 5 recommended movies for user 5277, using an average of the user's ratings weighted by similarity to each candidate movie. You do not need to exclude movies they have rated. Consider all movies with nonnegative similarities (do not limit neighborhood size).

Examples

Here are some values to check your calculations:

- Similarity between Toy Story and Star Wars, raw: 0.645
- Similarity between Toy Story and Star Wars, normalized: -0.378

✓ Complete

