2025

4Geeks Academy: data science cohort 12

DAY 30: RECOMMENDER SYSTEMS

TODO

RECOMMENDER SYSTEMS	Overview & types, common models & implementations
MOVIE RECOMMENDATION SYSTEM	Work on movie recommendation system (course materials repo - substitute for ‘Recommendation Systems - Your Future with Data’, Recommendation Systems module)
NLP PROJECT	Submit NLP Project Tutorial (Intro to NLP module), if you haven’t done so already

TOPICS

01 RECOMMENDER TYPES

02 MODELS & IMPLEMENTATION

RECOMMENDER TYPES

WHAT

Analyze data about users and items to suggest products, content, or services that a person is likely to find interesting or useful

HOW

- **Content-Based Filtering**: Finds similar items by analyzing the features of the items (like movie genres, actors, or plot keywords)
- **Collaborative Filtering:** Makes recommendations based on the characteristics of the user ("people like you also enjoyed these items")
- **Hybrid Systems:** Combines both content-based and collaborative approaches

MODELS & IMPLEMENTATION

CONTENT-BASED FILTERING

Example: Movie recommender uses genres, cast, and plot keywords to suggest "The Dark Knight" after you watched "Iron Man"

- **K-Nearest Neighbors (KNN)** - Finds similar items based on features
- **TF-IDF + Cosine Similarity** - Measures text similarity between items

COLLABORATIVE FILTERING

Example: Amazon suggests books because "customers who bought this item also bought..."

- **User-Based KNN** - Finds users with similar preferences
- **Matrix Factorization (SVD, NMF)** - Discovers hidden user-item patterns

HYBRID

Example: Viewing history (collaborative) + movie genres/actors you prefer (content-based) for personalized recommendations

- **Weighted Hybrid** - Combines scores from multiple models
- **Deep Learning Models** - Neural networks that process both content and collaborative data
- **Ensemble Methods** - Random Forest or Gradient Boosting combining multiple approaches