ASSIGNMENT – 14

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import pandas as pd
from surprise import Dataset, Reader, SVD
from surprise.model_selection import train_test_split
from surprise import accuracy

data = pd.read_csv('spotify.csv')
reader = Reader(rating_scale=(0, 1))
data_surprise = Dataset.load_from_df(data[['user_id', 'track_id', 'rating']], reader)

trainset, testset = train_test_split(data_surprise, test_size=0.2)

model = SVD()
model.fit(trainset)

predictions = model.test(testset)

rmse = accuracy.rmse(predictions)
print(f'Collaborative Filtering RMSE: {rmse}')

user_id_to_recommend_for = 1  # Replace with the user ID you want to recommend songs to

unique_track_ids = data['track_id'].unique()

# Create a list of (track_id, predicted_rating) tuples for the specified user
user_recommendations = []
for track_id in unique_track_ids:
    predicted_rating = model.predict(user_id_to_recommend_for, track_id).est
    user_recommendations.append((track_id, predicted_rating))

user_recommendations.sort(key=lambda x: x[1], reverse=True)


top_n = 10  # Change this number to get more or fewer recommendations
print(f"Top {top_n} Recommended Tracks for User {user_id_to_recommend_for}:")
for i, (track_id, predicted_rating) in enumerate(user_recommendations[:top_n], start=1):
    track_info = data[data['track_id'] == track_id].iloc[0]
    track_name = track_info['track_name']
    artist_name = track_info['artist_name']
    print(f"{i}. {track_name} by {artist_name} (Predicted Rating: {predicted_rating:.2f})")
```