Project Title:

Recommender System for E-Commerce Platform

Internship Organization:

YBI Foundation

Submitted By:
V. Madhavan

Objective:

The main objective of this project is to develop a simple yet effective product recommender system for e-commerce platforms.
The system suggests relevant products to users based on what other similar users have liked or interacted with.
It helps in personalizing the shopping experience, just like we see on Amazon or Flipkart.

Tools and Technologies Used:

Programming Language: Python

Platform: Jupyter Notebook

Libraries Used:

Pandas (for data handling)

Scikit-learn (for similarity calculations)

NumPy (for matrix operations)

Algorithm: Collaborative Filtering using Cosine Similarity

Dataset Description:

The dataset used is a sample user-product interaction dataset.
It contains:

User IDs – Unique users

Product Names – Items bought or interacted with

Interaction Data – Such as purchases or clicks

For simplicity, a small dataset was used, but the same logic can be applied to large real-world datasets.

Methodology:

1. Data Preprocessing:
The raw data was cleaned and transformed into a format where each user's interaction with products could be analyzed.

2. User-Item Matrix:
A matrix was created where rows represent users and columns represent products. The values inside the matrix represent whether a user has interacted with a product.

3. Similarity Calculation:
Cosine Similarity was used to find out how similar users are based on the products they have interacted with.

4. Recommendation Generation:
For a given user, we looked at similar users and found products they liked which the target user hasn't interacted with yet.
These products are recommended to the user.

Output:

The system recommends a list of products for a selected user.
For example, for User 1, it may suggest:

Bluetooth Speaker

Wireless Mouse

Laptop Stand

Evaluation:

Since this is a demo project using a small dataset, no complex metrics like RMSE or precision were used.
But the recommendations were manually verified and were found to be relevant based on user patterns.

Real-Life Application:

This kind of recommender system is used by all major platforms like:

Amazon (product suggestions)

Netflix (movie recommendations)

Flipkart, Myntra (frequently bought together, trending for you)

Conclusion:

This internship project helped me understand the fundamentals of building a recommender system.
Using simple tools like cosine similarity and collaborative filtering, I was able to generate relevant product recommendations.
Such systems play a very big role in modern online shopping, and this was a great learning experience.