

Content-Based E-Commerce Recommendation System for Beauty Products

Area of Interest and Network Involvement

In this project, I propose building a **content-based recommendation system** for beauty products using the **Sephora Product and Skincare Review Dataset**. The system will analyze product similarities, representing each product as a **node** in an **item-item graph**. Edges will reflect **content-based similarities** derived from features like descriptions and reviews. This structure leverages **network analysis** to deliver tailored recommendations, enhancing user satisfaction.

Data Sources

The project will utilize the **Sephora Product and Skincare Review Dataset** from Kaggle. The link is <https://www.kaggle.com/datasets/nadyinky/sephora-products-and-skincare-reviews/data>. This dataset provides:

- Product metadata such as name, brand, category, and ingredients.
- Skincare reviews, ratings, and customer feedback.

Modes of Interaction

The system allows users to explore the beauty product dataset in the following ways:

1. Search Product by Name:

- Users can search directly by entering a product name to retrieve matching items.

2. Provide Additional Product Stats:

- Displays key metrics such as **average rating**, **number of reviews**, **price**, and **size**.

3. Find Similar Products (Most Closely Related Nodes):

- Recommends products with **similar descriptions and tags**, following the idea: "Because you like this item, you may also like...".
- **Example:** If a user views a **moisturizing face cream**, the system might suggest creams with ingredients like **hyaluronic acid**.

4. Find Similar Products with Conditions (Most Closely Related Nodes):

- Recommends similar products with additional filters, such as **cheaper** or **higher-rated** alternatives.
- **Example:** If a user views a **moisturizing face cream** and selects "**cheaper than this**", the system recommends similar creams with lower prices.

5. Identify the Most Universal Product (Most Connected Node):

- Highlights products with the highest similarity connections in a specific category, showing **widely applicable items**.
- **Example:** A best-selling **sunscreen** may link to various routines, such as **moisturizers**, **primers**, or **serums**, showcasing its versatility.