

PROJECT-11

Cosmetics recommendation system

Project Description: Developing a Cosmetic Recommendation System This project focuses on building a content-based recommendation system for cosmetic products. By analyzing chemical ingredient lists, the system suggests similar items to consumers with different skin types, helping them make informed purchasing decisions.

Tools/Technologies Used:

- Python: Programming language for data processing and model development.
- Pandas & NumPy: Data manipulation and numerical operations.
- Scikit-learn: Machine learning techniques for feature extraction and similarity calculations.
- t-SNE (T-distributed Stochastic Neighbor Embedding): Dimensionality reduction for high-dimensional ingredient data.
- Bokeh: Interactive visualization of product similarities.

Data Processing and Feature Engineering:

- Collected and processed ingredient data for 1,472 cosmetic products.
- Tokenized ingredient lists to construct a document-term matrix (DTM), representing ingredient presence numerically.

Dimensionality Reduction and Visualization:

- Applied t-SNE to reduce the dimensionality of the ingredient matrix, ensuring meaningful visual representation.
- Generated an interactive Bokeh plot to explore product similarities based on ingredient overlap.

Recommendation Model Development:

- Implemented a content-based filtering approach using ingredient similarity.
- Recommended alternative products based on shared ingredients and suitability for different skin types.

Insights and Impact:

- Provided an effective system to help consumers find alternative cosmetic products.
- Allowed users to explore similar products based on ingredient composition, ensuring better compatibility with individual skin conditions.

Conclusion: The project successfully developed a content-based recommendation system for cosmetic products. By leveraging ingredient similarity and interactive visualization, the system enhances consumer decision-making and provides personalized product recommendations. The approach can be extended further with customer preferences and ratings for improved recommendations.