Embedding-Based Fashion Search

Overview:

The Embedding-Based Fashion Search project aims to develop an advanced search and recommendation system for fashion products. Leveraging sophisticated techniques in natural language processing (NLP) and similarity search, the system utilizes embeddings generated by the SentenceTransformer model and employs the Faiss library for efficient vector indexing and similarity search. The user interacts with the system through a Streamlit-based user interface.

Technologies Used:

- **Streamlit:** For building an interactive and user-friendly web interface.
- **Pandas:** For data manipulation and loading.
- **NumPy:** For numerical operations and array manipulations.
- **Faiss:** For efficient similarity search and clustering of dense vectors.
- **SentenceTransformer:** For generating embeddings from product descriptions.

Project Workflow:

1. Data Ingestion (data_ingestion.py):

- **Loading Data:** The project starts by loading fashion product data from a CSV file using Pandas.
- **Loading Sentence Transformers:** The SentenceTransformer model is loaded for creating embeddings from product descriptions.
- **Create Embeddings:** The `create_embedding` function processes the product descriptions and generates embeddings using the pre-trained SentenceTransformer model.
- **Build Faiss Index:** The `build_faiss` function constructs a Faiss index based on the generated vector embeddings. The index is essential for efficient similarity searches.
- **Store Faiss Index:** The Faiss index is stored in a file using the `store_vector_store` function, ensuring that the index can be later loaded for similarity searches.

2. Streamlit Application (app.py):

- **Importing Packages:** Necessary libraries, including Streamlit, Pandas, NumPy, Faiss, and SentenceTransformer, are imported.
- **Loading Sample Data:** A subset of the fashion dataset is loaded for interactive exploration. The user is notified of successful or unsuccessful data loading.
- **Encoder Loading:** The SentenceTransformer model is loaded for encoding user input during searches.
- **Creating Streamlit UI:** The Streamlit UI includes a sidebar for search options such as input text, top results, and gender filtering. The main section displays fashion search results based on user preferences.

- **Search and Display Results:** Upon user interaction, the application encodes the search text, performs a similarity search using the Faiss index, and displays relevant fashion product results. Gender filtering allows users to refine their search.
- **About This Project Page:** The user can access additional information about the project by clicking the "About This Project" button, which invokes the `credit_page` function.

3. About This Project Page (credit_page.py):

- **Project Overview:** The `credit_page` function provides an overview of the Embedding-Based Fashion Search project. It highlights the use of SentenceTransformer embeddings and Faiss for similarity search.
- **Technologies Used:** The function outlines the technologies employed in the project, including Streamlit, Pandas, NumPy, Faiss, and SentenceTransformer.

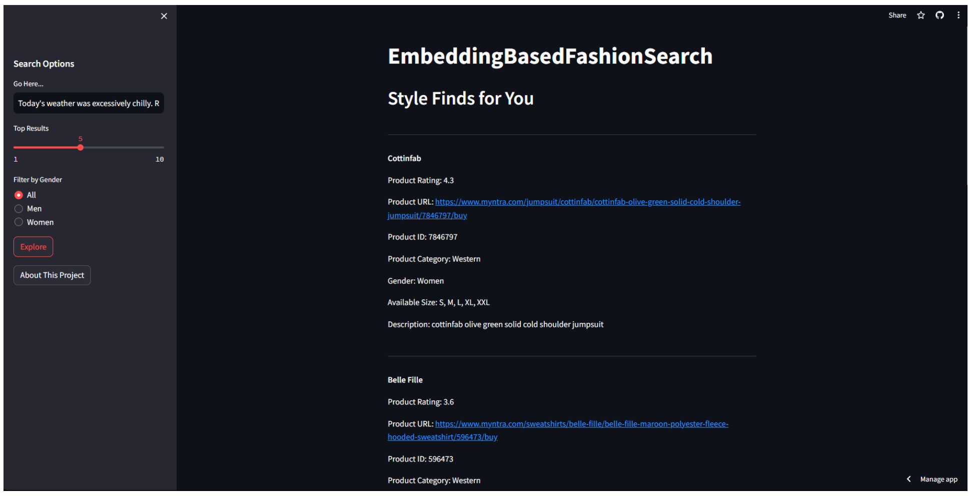
Running the Project:

1. **Data Ingestion:** Execute `data_ingestion.py` to load data, create embeddings, build the Faiss index, and store the index file.

```
python data_ingestion.py
```

2. **Streamlit Application:** Run `app.py` to launch the Streamlit-based fashion search interface.

```
streamlit run app.py
```



Today's weather was excessively chilly. R

Filter by Gender
[✓ All]
Men
Women

EmbeddingBasedFashionSearch

Style Finds for You

Cottinfab

Product Rating: 4.3

Product URL: https://www.myntra.com/jumpsuit/cottinfab/cottinfab-olive-green-solid-cold-shoulder-jumpsuit/7846797/buy

Product ID: 7846797

Product Category: Western

Gender: Women

Available Size: S, M, L, XL, XXL

Description: cottinfab olive green solid cold shoulder jumpsuit

Belle Fille

Product Rating: 3.6

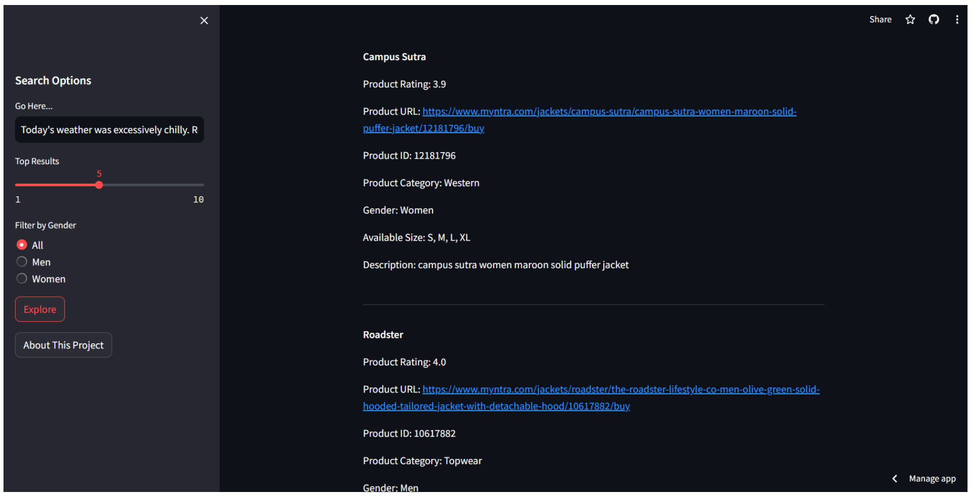
Product URL: https://www.myntra.com/sweatshirts/belle-fille/belle-fille-maroon-polyester-fleece-hooded-sweatshirt/596473/buy

Product ID: 596473

Product Category: Western

Figure 1: Today's weather was excessively chilly. Recommend a product for me.

The application allows users to explore fashion products through advanced similarity searches, providing a seamless and interactive experience in discovering relevant style finds.



Today's weather was excessively chilly. R

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[✓ All] Men Women

Campus Sutra

Product Rating: 3.9

Product URL: https://www.myntra.com/jackets/campus-sutra/campus-sutra-women-maroon-solid-puffer-jacket/12181796/buy

Product ID: 12181796

Product Category: Western

Gender: Women

Available Size: S, M, L, XL

Description: campus sutra women maroon solid puffer jacket

Roadster

Product Rating: 4.0

Product URL: https://www.myntra.com/jackets/roadster/the-roadster-lifestyle-co-men-olive-green-solid-hooded-tailored-jacket-with-detachable-hood/10617882/buy

Product ID: 10617882

Product Category: Topwear

Gender: Men

Figure 2: UI