**SNOOZE**

**Submitted for**

**Artificial Intelligence and Machine Learning CSET301**

Submitted by:

**E23CSEU1102 SOWMYA NEGI**

**E23CSEU1097 AARUSHI GOEL**

**E23CSEU1083 NANDINI JAISWAL**

Submitted to

**DR. SHWETANG DUBEY**

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**ABSTRACT**

In an era where online shopping platforms overwhelm users with excessive options, Snooze emerges as a solution to combat decision fatigue and doom scrolling. By leveraging artificial intelligence, Snooze simplifies the fashion discovery process using image, text, and color-based search modes. The system is engineered to prioritize user intent, providing results that align closely with what the user wants instead of feeding endless scrolls of unrelated products. Snooze integrates NLP, computer vision, and intelligent filtering to personalize search results, thus enhancing user satisfaction and reducing cognitive overload.

**INTRODUCTION**

Modern e-commerce interfaces often lead users into a loop of endless scrolling, popularly known as "doom scrolling," where users browse for extended periods without finding exactly what they need. This often leads to decision paralysis, wasted time, and unsatisfactory purchases. Snooze was developed as a solution to this growing problem. Unlike traditional platforms that bombard users with sponsored or algorithmically promoted products, Snooze uses AI to help users find only what they’re looking for—nothing more, nothing less.

**PROBLEM STATEMENT**

While the number of online fashion platforms has increased, so has the challenge of decision fatigue. Users often:

* Struggle to find relevant results due to keyword mismatches.
* Get stuck in endless browsing loops due to unrelated product suggestions.
* Experience frustration from irrelevant or misaligned search results.

There is a clear need for a system that provides accurate, focused product discovery tailored to specific user inputs.

**RELATED WORKS**

Several fashion search engines like Amazon, Myntra, and Etsy use basic search functionalities. While they provide a wide variety of results, they often lack:

* A focused search that avoids distracting or irrelevant suggestions.
* Integration of multi-modal search inputs (image, text, colour).
* A UX design that discourages doom scrolling and encourages mindful discovery.

Research papers on AI in e-commerce highlight the potential of content-based filtering, NLP, and image recognition, but few systems combine them into a unified, anti-doom-scrolling experience.

**PROPOSED SYSTEM**

Snooze addresses these gaps by offering:

* A multimodal AI-powered search engine.
* A UI/UX design that prevents unnecessary scrolling.
* Fast, personalized product results based on actual user input.

Core modules include:

* TextSearchEngine using NLP (TF-IDF embedding).
* ImageSearchEngine using MobileNetV2 for visual similarity.
* ColorSearchEngine based on dominant RGB values.

**CONTRIBUTION**

* Developed a modular AI-driven backend integrating NLP and CV models.
* Built a React + TailwindCSS frontend focusing on intuitive UX and minimal browsing.
* Implemented intelligent product filtering to minimize doom scrolling.
* Created a seamless pipeline to parse and clean large-scale fashion data.

**ARCHITECTURE**

The project is divided into four key layers:

1. **Data Processing**: Cleaning and enriching datasets (Flipkart, Myntra) with image analysis and dominant color extraction.
2. **Model Layer**:
   * TFIDFEmbedder for textual similarity.
   * ImageSearchModel using CNN embeddings.
   * Color comparison via Euclidean distance.
3. **Search Engine Layer**:
   * Unified under a central SnoozeAIEngine.
   * Supports color, image, and text queries.
4. **Frontend Interface**:
   * Built using React.js.
   * Styled with Tailwind CSS.
   * Redirects users to external product links with no distractions.

**FEATURES**

* **Text-Based Search**: Enter product descriptions to find precise matches using NLP.
* **Image-Based Search**: Upload a photo to find visually similar fashion items.
* **Color-Based Search**: Select a HEX color or click on color swatches to filter products.
* **Focused Results Only**: Shows only the top-k most relevant results—no infinite scroll.

**IMPLEMENTATION**

**Technologies Used**:

* Python (Pandas, NumPy, Scikit-learn, TensorFlow, PIL)
* React.js
* Tailwind CSS
* Excel datasets (Flipkart, Myntra merged)

**Code Modules**:

* color\_utils.py: Extracts dominant RGB values from images.
* data\_preprocessing.py: Loads and cleans product data.
* text\_embedding.py: Builds TF-IDF vectors for product titles.
* image\_search.py: Compares uploaded image with dataset using MobileNetV2.
* filters.py: Allows custom filters (brand, price, etc.).
* main.py: Pipeline integration for all AI modules.

**Frontend**:

* Displays search bar, upload box, color picker.
* Responsive grid layout of results.
* Each result links externally with minimum distractions.

**RESULTS**

The system was tested on merged Flipkart and Myntra product datasets.

**Test Queries**:

* **Text**: "Black Nike Running Shoes" returned relevant Nike sports shoes.
* **Image**: Uploaded a red dress image → system returned similar color and style matches.
* **Color**: Selected RGB(0, 0, 0) → returned black products consistently.

The product discovery was accurate, fast, and distraction-free.

**CONCLUSION**

Snooze successfully delivers on its promise to eliminate doom scrolling and provide a highly focused shopping experience. It leverages multiple AI technologies to ensure user intent is always prioritized. With its multimodal search interface and clutter-free design, it represents the next step in personalized online fashion discovery.

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