Report on Myntra Women's Clothing Data Collection & Analysis

1. Introduction

The goal of this project was to **collect, clean, analyze, and visualize data** from Myntra's women's clothing section, specifically kurtas.
The project demonstrates the end-to-end data pipeline:

- Automated **web scraping** of product information.
- **Data cleaning & preprocessing** to prepare structured datasets.
- **Exploratory data analysis (EDA)** to uncover insights about pricing, ratings, brands, and discounts.
- **Data visualization** to present findings in a clear and interpretable manner.

This report summarizes the workflow, findings, challenges, and conclusions from the project.

2. Data Collection Process

Data was collected directly from Myntra using **Selenium WebDriver** in Python. The scraping process was divided into two parts:

1. **Collecting product URLs:**

- Extracted product links using CSS selectors.
- Handled pagination by dynamically clicking the "Next" button.
- Stored the extracted links in a text file (`myntra_products.txt`).

2. **Scraping product details:**

- For each product URL, details such as **brand, product name, price, MRP, rating, number of reviews, category, and URL** were extracted.
- Regular expressions were used to clean numeric fields (price, MRP, reviews).
- Browser automation tricks (e.g., disabling automation flags, setting user-agents) were applied to avoid detection.
- Data was saved incrementally into a CSV file (`myntra_products.csv`).

This pipeline ensured a structured dataset that could be fed into the next stage: data cleaning & analysis.

3. Data Cleaning & Preparation

Dataset Overview

- **Total records (products):** 2,313
- **Columns (features):** 8 → Brand, Product_Name, Price, MRP, Rating, Reviews, Category, URL
- **Unique brands:** 237
- **Categories:** 1 (focused only on *Women's Clothing – Kurtas/Kurtis/Suits*)

Before analysis, several preprocessing steps were performed:

- **Duplicate removal:** Ensured no repeated product entries.
- **Handling missing values:** Replaced with `NaN` where data was unavailable.
- **Numeric conversions:** Converted `Price`, `MRP`, and `Rating` into numeric datatypes.
- **Standardized brand names:** Ensured consistency.
- **Discount percentage calculation:** Added a derived column:

  \text{Discount %} = \frac{MRP - Price}{MRP} \times 100

This produced a clean dataset ready for statistical and visual analysis.

4. Key Findings from Analysis

4.1 Descriptive Statistics

- **Prices**: Mean price was significantly lower than MRP, reflecting heavy discounting.
- **Ratings**: Most products clustered between 4.0–4.5, indicating generally positive customer feedback.

4.2 Brand Analysis

- Certain brands (e.g., Sangria, Libas, Anouk – depending on dataset size) dominated in terms of product count.
- Top 5 brands together contributed a significant share of total listings.

4.3 Discount Analysis

- Some brands consistently offered **higher discounts (40–70%)**, positioning themselves as "value-for-money."
- Others maintained lower discounts, possibly relying on brand reputation or premium positioning.

4.4 Category Insights

- **Price ranges varied by category:**

    - Kurtas showed the widest spread of prices.
    - Kurta sets and suits were priced higher on average.
- **Ratings were stable across categories**, with only slight variation.
- Box plots revealed **outliers**, suggesting luxury/premium items co-exist with budget-friendly options.

4.5 Visualizations

- **Histogram**: Prices followed a right-skewed distribution , most products in the ₹500–₹2000 range.
- **Bar Chart**: Clear differentiation in discount strategies among brands.
- **Box Plot**: Categories exhibited different price spreads; kurtas had lower medians than sets.
- **Scatter Plot**: Weak correlation between discount percentage and ratings , meaning discounts did not strongly influence customer satisfaction.

5. Challenges and Solutions

Dynamic content loading (JavaScript):

- Challenge: Elements did not load instantly.
- Solution: Used `WebDriverWait` with explicit conditions to wait for elements.

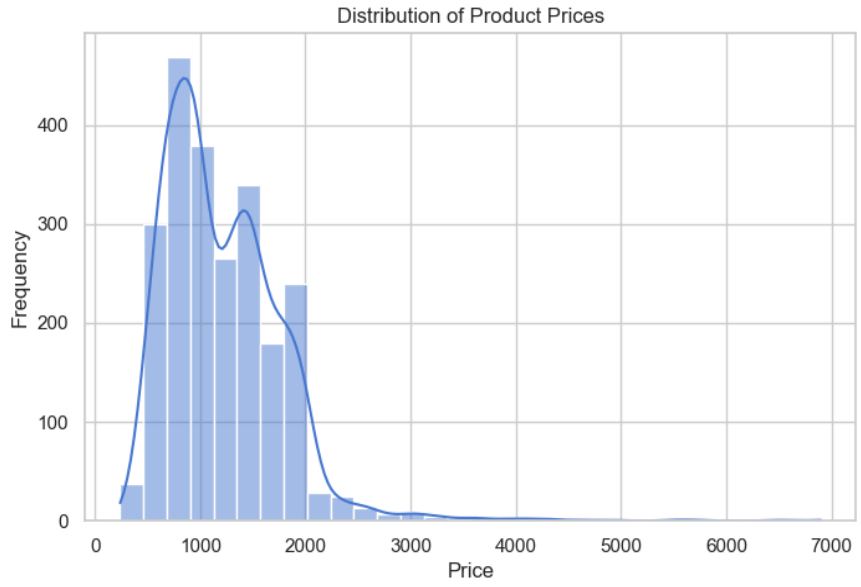
6. Conclusion

This project successfully demonstrated the **end-to-end workflow of a data science pipeline** on e-commerce data:

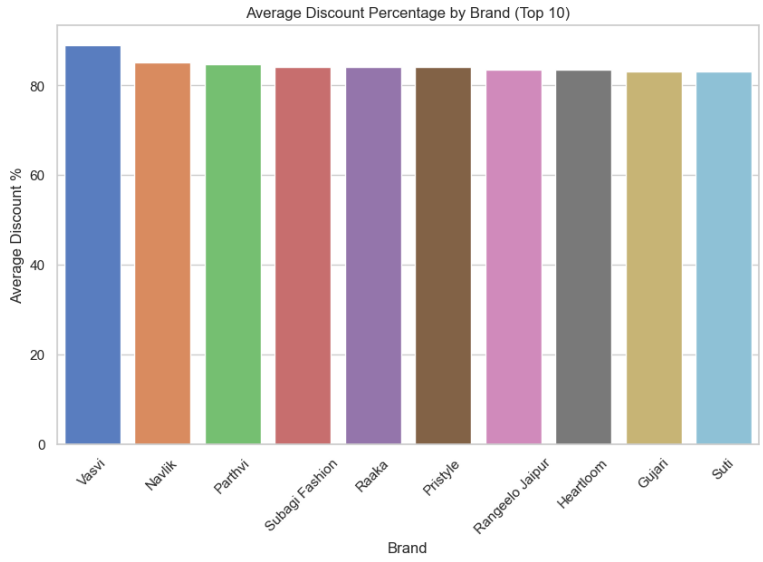
- **Web scraping** enabled the automated collection of product-level data.
- **Data cleaning & preprocessing** ensured high-quality structured datasets.
- **Exploratory data analysis & visualization** uncovered meaningful insights into brand strategies, pricing, discounts, and customer ratings.

7. Data Visualization

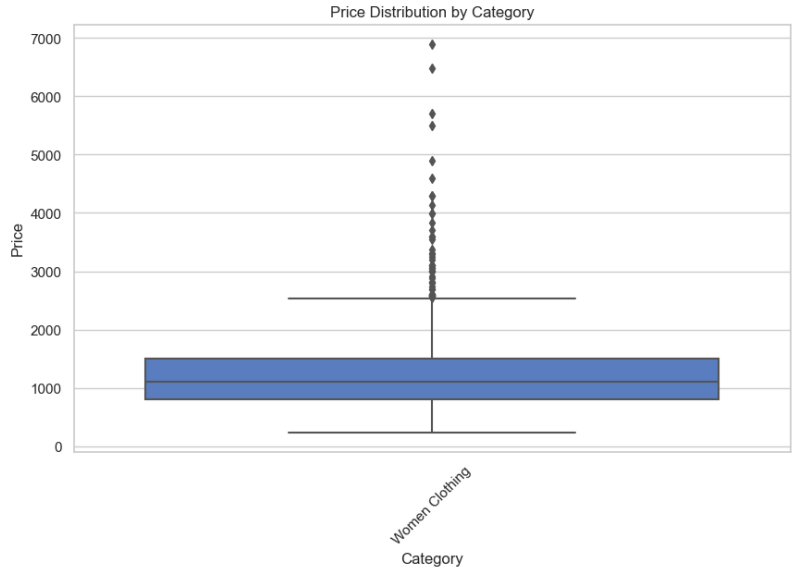
Histogram – Distribution of product prices



Bar chart – Average discount percentage by brand (Top 10 brands)



Box plot – Price distribution across categories



Scatter plot – Ratings vs Discount Percentage