Mini Project Report

Amazon Product Analyzer(WEB SCRAPING)

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Introduction

E-commerce platforms like Amazon host millions of products, making it challenging for users to filter and analyze them. This project, Amazon Product Analyzer, scrapes product data from Amazon and presents it in an interactive Streamlit dashboard with filtering and visualization features.

Objectives

The objective of this project is to scrape essential product details from Amazon, including the title, price, rating, and product link, and store the collected information in a structured CSV file for easy access and analysis. An interactive dashboard is then developed using Streamlit, enabling users to filter and analyze the data efficiently. Furthermore, the project aims to provide meaningful insights by visualizing product information such as price and rating distributions, thereby helping users make informed decisions.

Tools and Technologies

- Language: Python 3.5x +
- Libraries: requests, beautifulsoup4, pandas, streamlit
- Output File: CSV (amazon_products.csv)
- Platform: Streamlit (for interactive UI)

Methodology

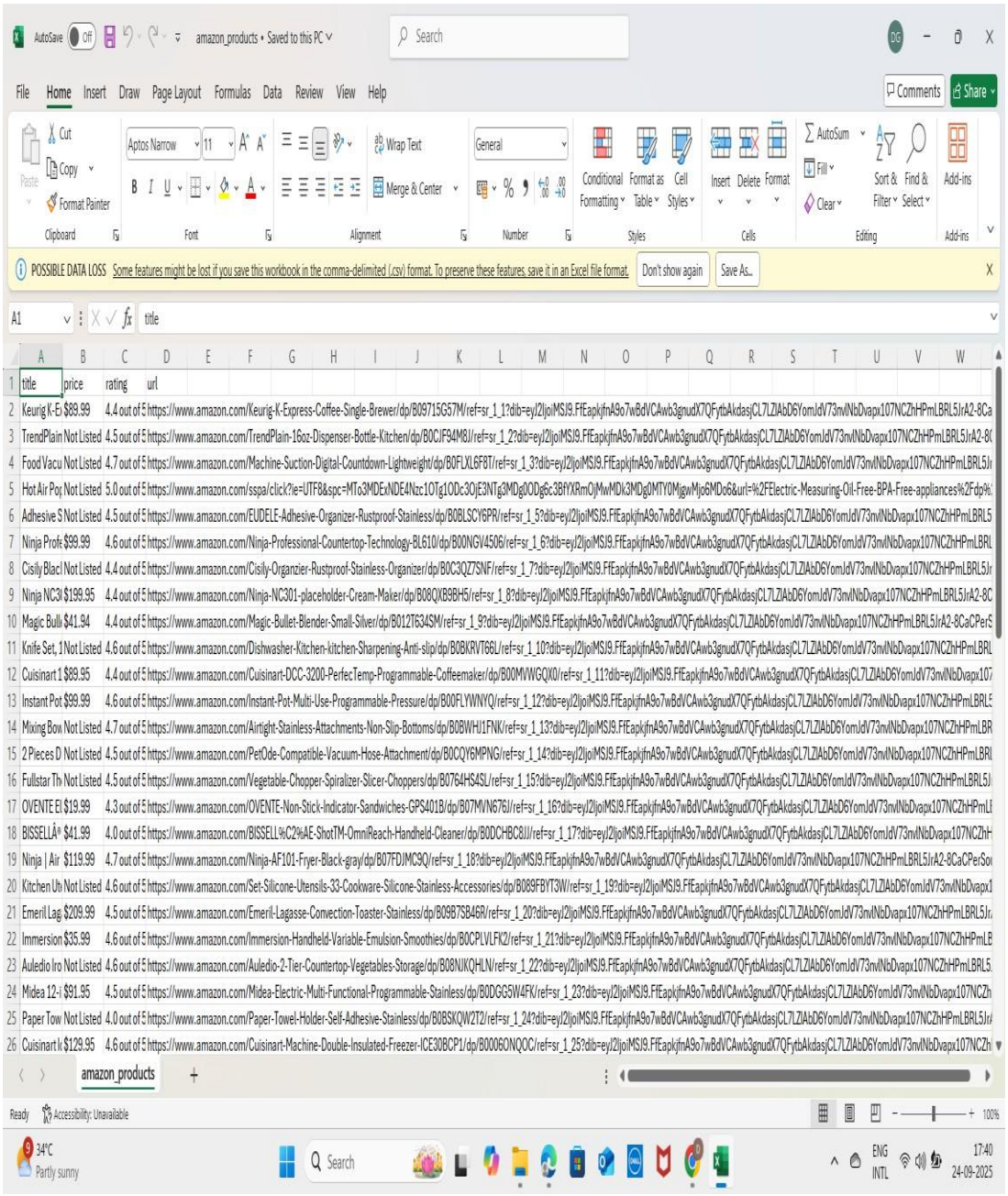
The project was developed in the following steps:

1. **Web Scraping**
    - Sent requests to Amazon product pages.
    - Parsed HTML using BeautifulSoup.
    - Extracted details like product name, price, rating, and URL.
    - Stored the results in a CSV file.

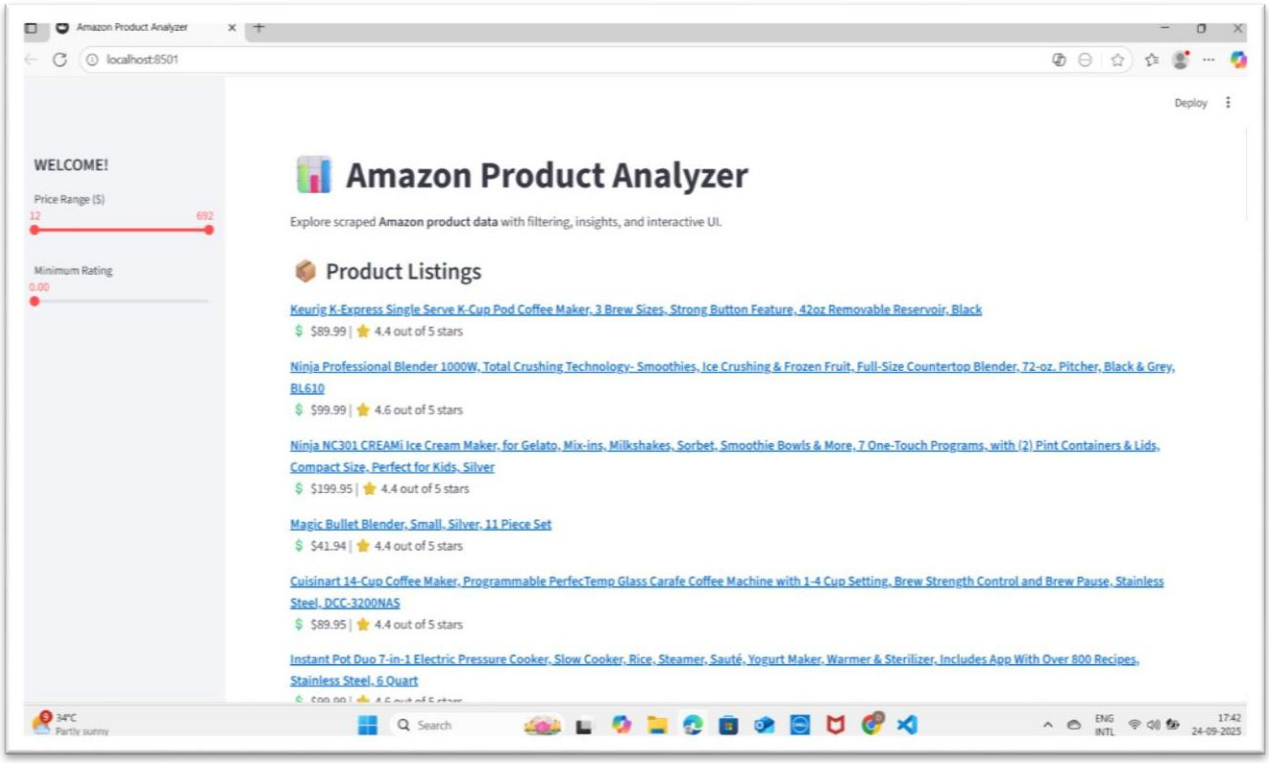
2. **Data Preprocessing**
    - Cleaned and formatted the scraped data.
    - Handled missing values (e.g., unavailable ratings or prices).
    - Converted text ratings (e.g., "4.2 out of 5") into numerical values.

3. **Dashboard Development**
    - Used Streamlit to build an interactive web app.
    - Implemented filters for price range and minimum rating.
    - Displayed product listings with clickable links.
    - Added metrics such as total products, average price, and average rating.
    - Visualized price and rating distribution using bar charts.

Results :



	title	price	rating	url
2	Keurig K-Ex	$89.99	4.4 out of 5	https://www.amazon.com/Keurig-K-Express-Coffee-Single-Brewer/dp/B09715G57M/ref=sr_1_1?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5JrA2-8Ca
3	TrendPlain	Not Listed	4.5 out of 5	https://www.amazon.com/TrendPlain-16oz-Dispenser-Bottle-Kitchen/dp/B0CJF94M8J/ref=sr_1_2?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5JrA2-8(
4	Food Vacu	Not Listed	4.7 out of 5	https://www.amazon.com/Machine-Suction-Digital-Countdown-Lightweight/dp/B0FLXL6F8T/ref=sr_1_3?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5Jr
5	Hot Air Po	Not Listed	5.0 out of 5	https://www.amazon.com/sspa/click?ie=UTF8&spc=MTo3MDExNDE4Nzc1OTg1ODc3OjE3NTg3MDg0ODg6c3BfYXRmOjMwMDk3MDg0MTY0MjgwMjo6MDo6&url=%2FElectric-Measuring-Oil-Free-BPA-Free-appliances%2Fdp%2
6	Adhesive S	Not Listed	4.5 out of 5	https://www.amazon.com/EUDELE-Adhesive-Organizer-Rustproof-Stainless/dp/B0BLSCY6PR/ref=sr_1_5?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5
7	Ninja Profe	$99.99	4.6 out of 5	https://www.amazon.com/Ninja-Professional-Countertop-Technology-BL610/dp/B00NGV4506/ref=sr_1_6?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL
8	Cisily Blac	Not Listed	4.4 out of 5	https://www.amazon.com/Cisily-Organizer-Rustproof-Stainless-Organizer/dp/B0C3QZ7SNF/ref=sr_1_7?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5Jr
9	Ninja NC3	$199.95	4.4 out of 5	https://www.amazon.com/Ninja-NC301-placeholder-Cream-Maker/dp/B08QXB9BH5/ref=sr_1_8?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5JrA2-8C
10	Magic Bull	$41.94	4.4 out of 5	https://www.amazon.com/Magic-Bullet-Blender-Small-Silver/dp/B012T634SM/ref=sr_1_9?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5JrA2-8CaCPerS
11	Knife Set, 1	Not Listed	4.6 out of 5	https://www.amazon.com/Dishwasher-Kitchen-kitchen-Sharpening-Anti-slip/dp/B0BKRVT66L/ref=sr_1_10?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL
12	Cuisinart 1	$89.95	4.4 out of 5	https://www.amazon.com/Cuisinart-DCC-3200-PerfecTemp-Programmable-Coffeemaker/dp/B00MVWGQX0/ref=sr_1_11?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107
13	Instant Pot	$99.99	4.6 out of 5	https://www.amazon.com/Instant-Pot-Multi-Use-Programmable-Pressure/dp/B00FLYWNYQ/ref=sr_1_12?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5
14	Mixing Bow	Not Listed	4.7 out of 5	https://www.amazon.com/Airtight-Stainless-Attachments-Non-Slip-Bottoms/dp/B0BWH11FNK/ref=sr_1_13?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBR
15	2 Pieces D	Not Listed	4.5 out of 5	https://www.amazon.com/PetOde-Compatible-Vacuum-Hose-Attachment/dp/B0CQY6MPNG/ref=sr_1_14?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL
16	Fullstar Th	Not Listed	4.5 out of 5	https://www.amazon.com/Vegetable-Chopper-Spiralizer-Slicer-Choppers/dp/B0764HS4SL/ref=sr_1_15?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5J
17	OVENTE El	$19.99	4.3 out of 5	https://www.amazon.com/OVENTE-Non-Stick-Indicator-Sandwiches-GPS401B/dp/B07MVN676J/ref=sr_1_16?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLE
18	BISSELL®	$41.99	4.0 out of 5	https://www.amazon.com/BISSELL%C2%AE-ShotTM-OmniReach-Handheld-Cleaner/dp/B0DCHBC8JJ/ref=sr_1_17?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhH
19	Ninja | Air	$119.99	4.7 out of 5	https://www.amazon.com/Ninja-AF101-Fryer-Black-gray/dp/B07FDJMC9Q/ref=sr_1_18?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5JrA2-8CaCPerSo
20	Kitchen Ut	Not Listed	4.6 out of 5	https://www.amazon.com/Set-Silicone-Utensils-33-Cookware-Silicone-Stainless-Accessories/dp/B089FBYT3W/ref=sr_1_19?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx1
21	Emeril Lag	$209.99	4.5 out of 5	https://www.amazon.com/Emeril-Lagasse-Convection-Toaster-Stainless/dp/B09B7SB46R/ref=sr_1_20?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5Jr
22	Immersion	$35.99	4.6 out of 5	https://www.amazon.com/Immersion-Handheld-Variable-Emulsion-Smoothies/dp/B0CPLVLFK2/ref=sr_1_21?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLB
23	Auledio Iro	Not Listed	4.6 out of 5	https://www.amazon.com/Auledio-2-Tier-Countertop-Vegetables-Storage/dp/B08NJKQHLN/ref=sr_1_22?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5.
24	Midea 12-i	$91.95	4.5 out of 5	https://www.amazon.com/Midea-Electric-Multi-Functional-Programmable-Stainless/dp/B0DGG5W4FK/ref=sr_1_23?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZh
25	Paper Tow	Not Listed	4.0 out of 5	https://www.amazon.com/Paper-Towel-Holder-Self-Adhesive-Stainless/dp/B0BSKQW2T2/ref=sr_1_24?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZhHPmLBRL5Jr
26	Cuisinart Ic	$129.95	4.6 out of 5	https://www.amazon.com/Cuisinart-Machine-Double-Insulated-Freezer-ICE30BCP1/dp/B0006ONQOC/ref=sr_1_25?dib=eyJ2IjoiMSJ9.FfEapkjfnA9o7wBdVCAwb3gnudX7QFytbAkdasjCL7LZlAbD6YomJdV73nvlNbDvapx107NCZh


Amazon Product Analyzer
localhost:8501
Deploy
WELCOME!
Price Range ($)
12
692
Minimum Rating
0.00
Amazon Product Analyzer
Explore scraped Amazon product data with filtering, insights, and interactive UI.
Product Listings
Keurig K-Express Single Serve K-Cup Pod Coffee Maker, 3 Brew Sizes, Strong Button Feature, 42oz Removable Reservoir, Black
$89.99 | 4.4 out of 5 stars
Ninja Professional Blender 1000W, Total Crushing Technology- Smoothies, Ice Crushing & Frozen Fruit, Full-Size Countertop Blender, 72-oz. Pitcher, Black & Grey, BL610
$99.99 | 4.6 out of 5 stars
Ninja NC301 CREAMi Ice Cream Maker, for Gelato, Mix-ins, Milkshakes, Sorbet, Smoothie Bowls & More, 7 One-Touch Programs, with (2) Pint Containers & Lids, Compact Size, Perfect for Kids, Silver
$199.95 | 4.4 out of 5 stars
Magic Bullet Blender, Small, Silver, 11 Piece Set
$41.94 | 4.4 out of 5 stars
Cuisinart 14-Cup Coffee Maker, Programmable PerfecTemp Glass Carafe Coffee Machine with 1-4 Cup Setting, Brew Strength Control and Brew Pause, Stainless Steel, DCC-3200NAS
$89.95 | 4.4 out of 5 stars
Instant Pot Duo 7-in-1 Electric Pressure Cooker, Slow Cooker, Rice, Steamer, Sauté, Yogurt Maker, Warmer & Sterilizer, Includes App With Over 800 Recipes, Stainless Steel, 6 Quart
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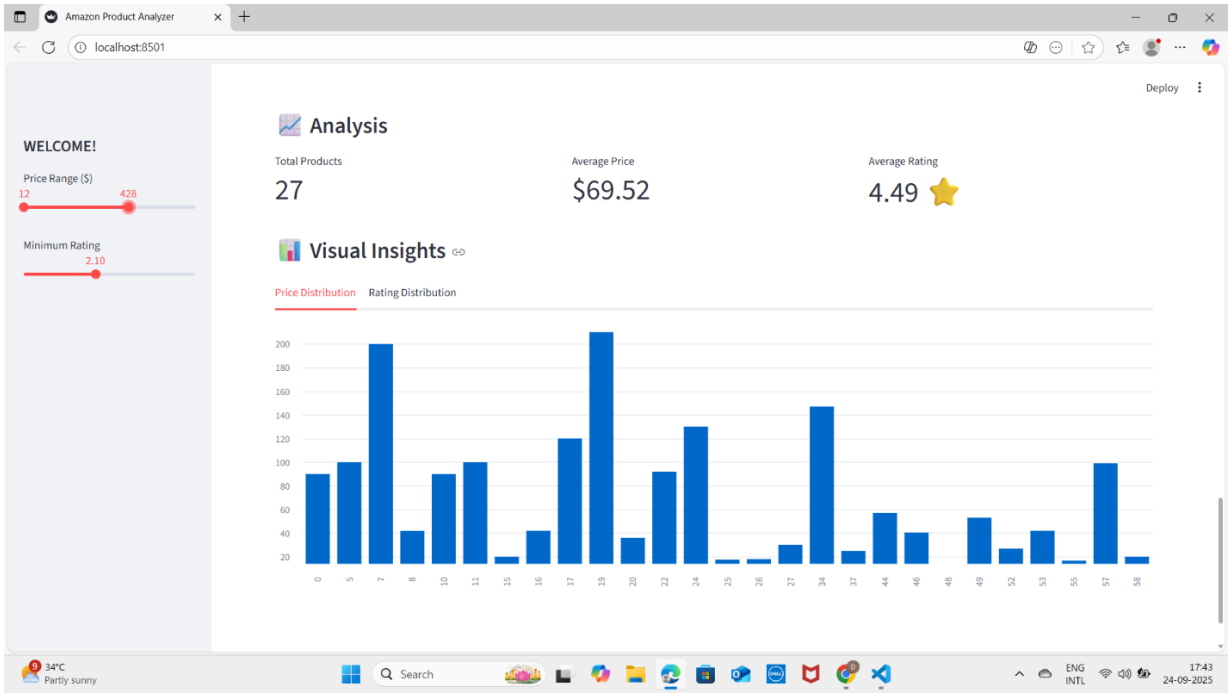
Partly sunny
Search
ENG
INTL
17:42
24-09-2025


Amazon Product Analyzer
localhost:8501
Deploy
WELCOME!
Price Range ($)
12
428
Minimum Rating
2.10
Analysis
Total Products
27
Average Price
$69.52
Average Rating
4.49
Visual Insights
Price Distribution
Rating Distribution
200
180
160
140
120
100
80
60
40
20
0
5
7
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19
20
22
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37
44
46
48
49
52
53
55
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58
34°C
Partly sunny
Search
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INTL
17:43
24-09-2025

The project successfully :

- Collected product details from Amazon and stored them in a CSV file.
- Built an interactive dashboard where users can:
    - Filter products based on price range and rating.
    - View clickable product links.
    - Analyze key insights such as total products, average price, and average rating.
- Generated bar charts to show the distribution of product prices and ratings.

Example Insights:

- Most products fall under the mid-price range.
- Higher-rated products are more consistent in sales and popularity.

Applications :

- For Buyers: Compare and filter products efficiently.
- For Sellers: Track competitor prices and ratings.
- For Researchers: Perform market analysis and product comparison.

Limitations & Future Scope

- Frequent scraping may lead to Amazon blocking requests.
- Current version extracts only basic details (title, price, rating, URL).
- Future improvements:
    - Multi-page scraping for larger datasets.
    - Database storage instead of CSV.
    - Machine learning models for price prediction and trend analysis.

Conclusion

The Amazon Product Analyzer project shows how web scraping combined with interactive visualization can transform unstructured e-commerce data into useful insights. It provides buyers, sellers, and researchers with a simple tool to analyze products more effectively.

This project can serve as a foundation for more advanced applications in market research, product recommendation systems, and competitor analysis.