

Web Crawler for Lazada Women's Products

HyperData

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Introduction

01. Project Overview

- Developed a high-performance web crawler to collect product data from Lazada Malaysia.
- Focused on women-related categories:
 - Beauty & Skincare
 - Health & Wellness
 - Home & Living
 - Home Appliances
 - Mother & Baby
 - Stationery
 - Women's Fashion.
- Collected 115,090 product records using Python-based scraping tools.

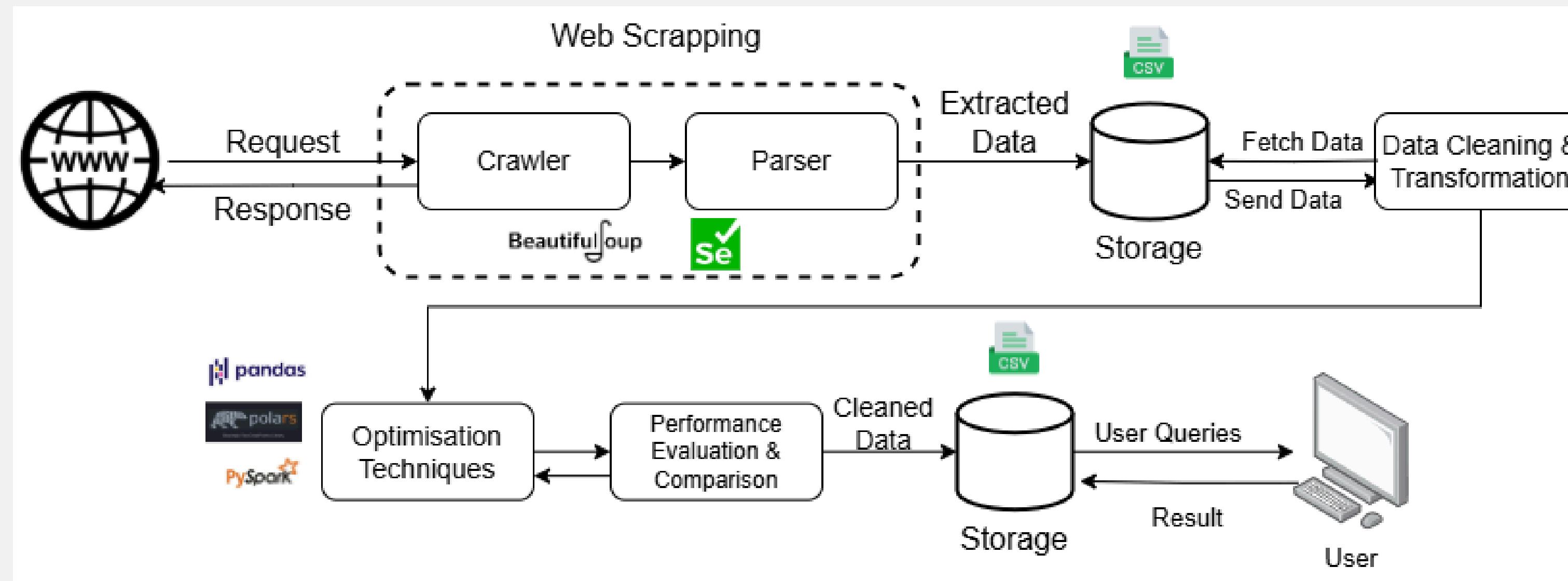
02. Tools & Techniques

- Website: [Lazada Malaysia](#)
- Tools Used:
 - BeautifulSoup
 - Selenium
 - Requests
 - Pandas
 - Polars
 - PySpark
- Methods Applied:
 - Multithreading
 - multiprocessing
 - distributed processing
 - Ethical scraping with crawl delays respected

03. Objective

- Gather and clean over 100,000 structured product records
- Analyse data by price tiers, popularity, and location performance
- Compare efficiency of different data processing frameworks

System Architecture Diagram



Tools and Tech Used

- BeautifulSoup
- Selenium
- Python
- Pandas
- Polars
- PySpark



Merged 7 separate DataFrames
into one unified dataset

Checked row and column counts
for verification

Cleaned fields like "Quantity Sold"
(e.g., "1.3K" → 1300)

Converted data types using error
coercion

Handled missing values:

- Numeric → 0
- String → "N/A"

Removed duplicate records to
ensure data integrity



Data Cleaning & Transformation & Formatting



Converted all string fields (e.g.,
Product Name, Location) to
uppercase

Cast numerical fields like
"Quantity Sold", "Reviews" to Int64

Maintained uniform data types
across all columns

Ensured structure and formatting
consistency for seamless
optimisation

Data Collection



Crawling Method



Records Collected

- Total Records: 115,090
- From: 36 category-based URLs
- Fields Collected:
 - Product Name
 - Price
 - Seller Location
 - Quantity Sold
 - Total Reviews

Ethical Considerations

- Purpose: Educational and research use only
- Compliance:
 - Lazada did not block scraping in target areas
 - Crawl delays respected to avoid server overload
 - No personal data accessed
 - CAPTCHA handled manually — no bypassing
 - If available, would use official API or request permission

Optimisation Technique



Polars



- Supports multithreading and lazy evaluation
- Executes operations across multiple CPU cores
- Significantly faster than Pandas for large data



PySpark

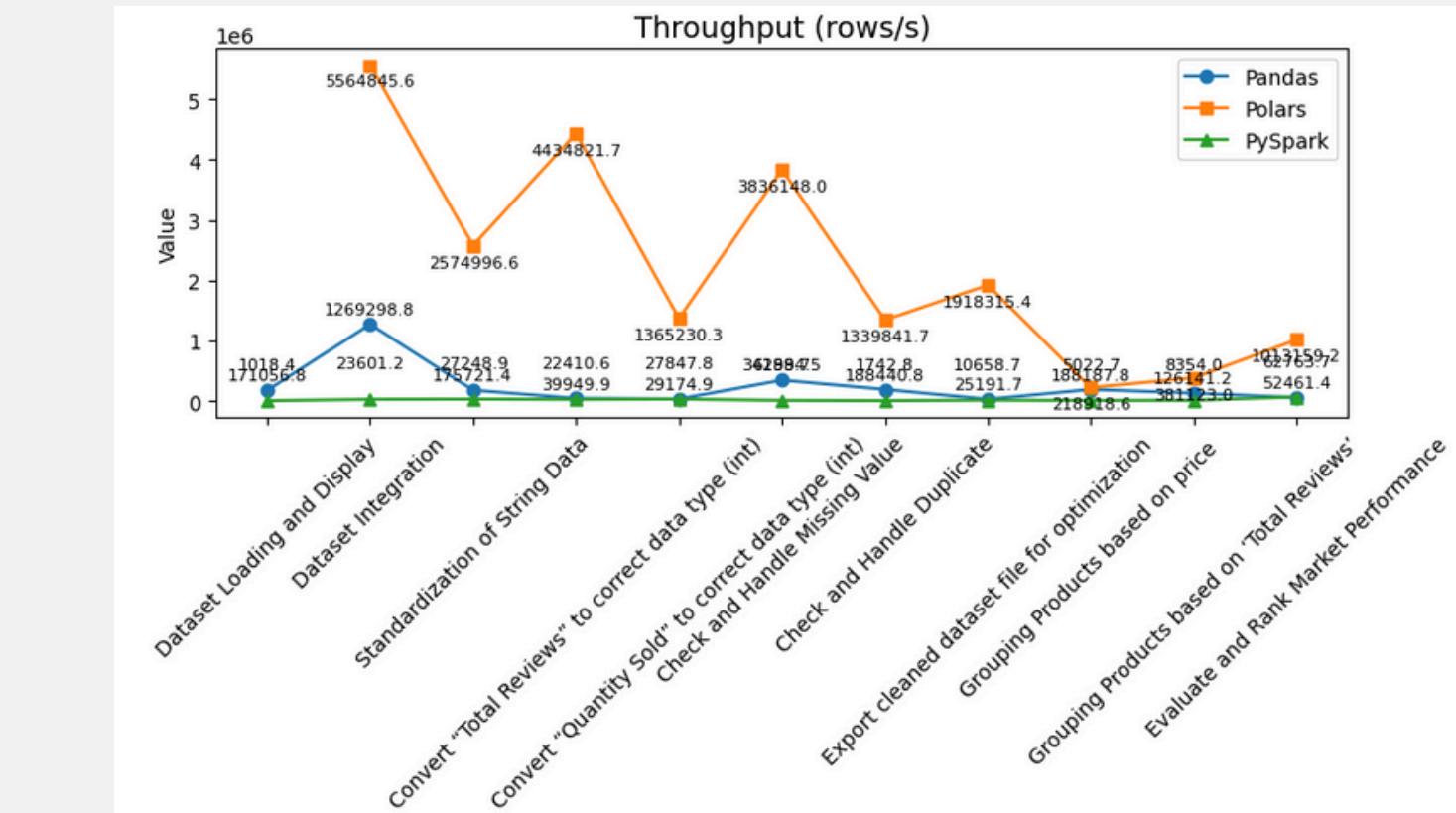
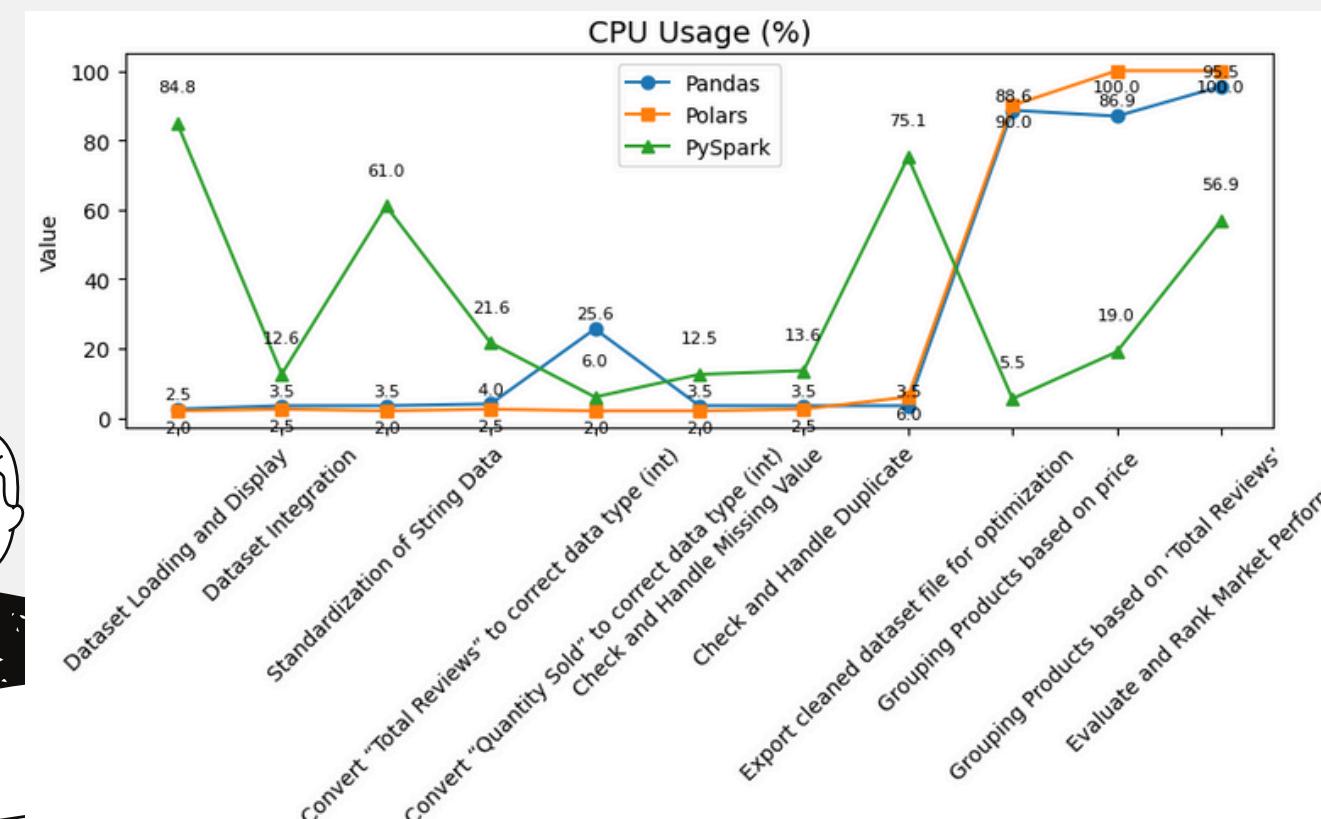
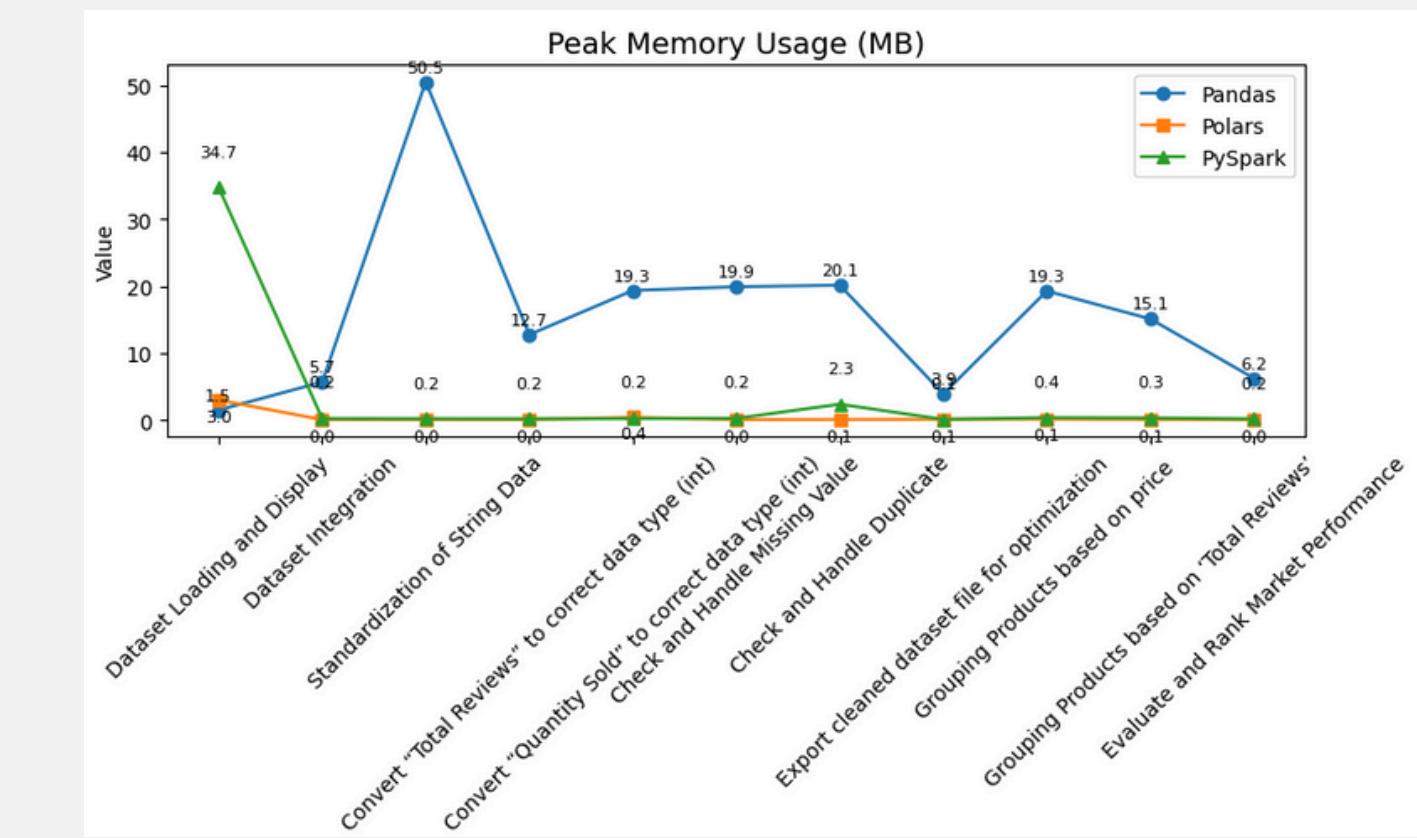
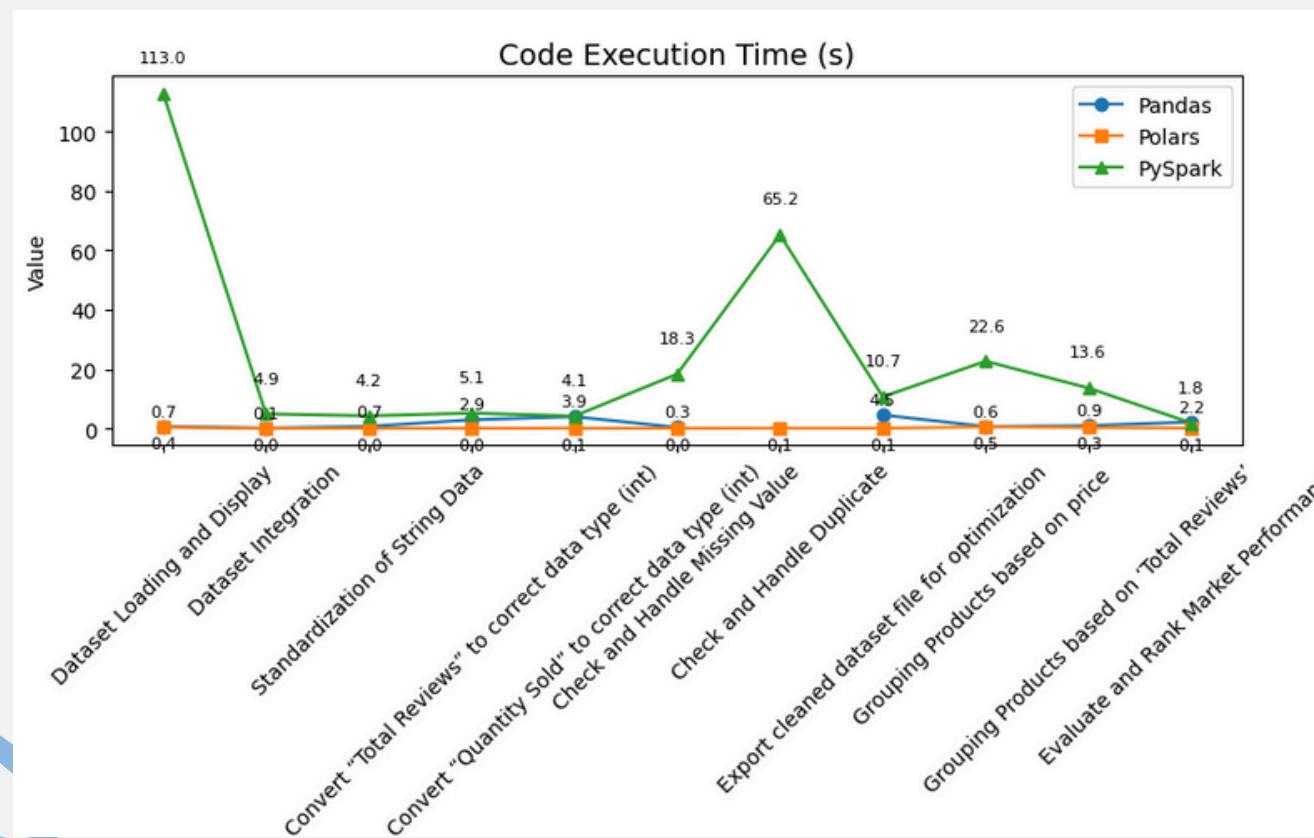


- Built on Apache Spark (distributed computing)
- Enables parallel processing across cores/machines
- Ideal for very large datasets
- Offers distributed architecture and native optimizations



Performance Evaluation

Overall performance
between the libraries



Polars

Pandas

PySpark

Final reflections

- ✓ Hands-on experience scraping over 115,000 Lazada Women category entries
- ✓ Explored and benchmarked Pandas, Polars, and PySpark
- ✓ Understood performance trade-offs: speed, memory, and scalability
- ✓ Improved technical skills in Python and data processing libraries
- ✓ Strengthened collaboration, critical thinking, and problem-solving abilities



Future Steps

🚀 Automate CAPTCHA Handling:

Use tools like 2Captcha to streamline scraping and avoid manual delays

🚀 Leverage GPU-Accelerated Libraries:

Adopt RAPIDS cuDF to boost data processing using GPU power

🚀 Apply Machine Learning Techniques:

Use clustering (e.g., K-Means) for customer segmentation and deeper analysis



**Thank you
very much!**

HyperData