Title: Exploring Co-Purchasing Patterns in Amazon Customer Reviews

Abstract:

The project's goal is to find out which product combinations are most frequently bought together by analyzing co-purchasing patterns in an Amazon Customer Reviews dataset. This investigation can help with promotional campaigns and bundling methods by giving sellers and Amazon useful information. Rust is used for the implementation, which entails importing and preprocessing the dataset, creating a graph representation, calculating the number of product pairs, determining which pairs are popular, and visualizing the outcomes.

Introduction:

Purchases via the internet have increased dramatically as a result of e-commerce expansion, creating enormous datasets containing important consumer behavior data. Patterns that are essential for corporate plans can be found by analyzing this data. The objective of this research is to identify popular product combinations that are often purchased together by analyzing Amazon Customer Reviews. Sellers and Amazon can maximize suggestions and marketing efforts by analyzing co-purchasing habits.

Methodology:

The project is organized into multiple milestones and takes a methodical approach. The first step involves loading the Amazon Customer Reviews dataset into a Rust program and preprocessing it to extract pertinent data about reviews and product pairs. The integrity of the dataset is confirmed, and a subset is used to assess how well the loading and preparation processes worked.
After that, a graph representation is created with nodes standing in for products and edges for associations including co-purchasing. The graph serves as the foundation for further analysis and is an essential structure for recording interactions between items.
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After that, a graph representation is created with nodes standing in for products and edges for associations including co-purchasing. The graph serves as the foundation for further analysis and is an essential structure for recording interactions between items. To successfully communicate the insights acquired from the investigation, visualization is essential. The power of Rust is used to produce lucid and educational graphics.

Results:
A thorough investigation of co-purchasing trends in the Amazon Customer Reviews dataset is the project's output. Popular product pairings that have been identified offer insightful information for promotional campaigns and bundling tactics. The results are easier to understand and more accessible to a larger audience thanks to the visuals.

Conclusion:

This project shows how to use Rust to analyze big datasets and get insightful information. Through the project's focus on co-purchasing patterns in the Amazon Customer Reviews dataset, customer behavior is better understood. The popular product pairs that have been found can help Amazon and sellers make well-informed selections that will improve the entire shopping experience. Documentation of the process, findings, and graphics is done for reproducibility and clarity.

Future Work:
Subsequent research endeavors could encompass enhancing algorithms designed to detect favored duos, integrating increasingly sophisticated data analysis methodologies, and investigating supplementary dataset aspects. Its usefulness might also be increased by improving visualization strategies and incorporating the project into an intuitive application. The project acts as a basis for further investigation and examination of the field of e-commerce data exploration.