SENTIMENT ANALYSIS IN E-COMMERCE PLATFORM USING JAVA

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ABSTRACT

The proposed sentiment analysis framework for e-commerce platforms encompasses several key modules aimed at efficiently extracting opinion targets and opinion words from a given dataset. These modules include co-extracting opinion targets and words, partially supervised word alignment via POS tagging, and employing a constrained hill climbing algorithm for partially supervised candidate extraction. Additionally, the framework incorporates word alignment techniques and opinion association calculations to ascertain the confidence of extracted candidates. By iteratively refining candidate confidence through various stages of extraction and alignment, the framework enables accurate identification of opinion targets and words. The final step involves visualizing the graph of associated opinions and performing sentiment classification.

Keyword: - *Key Modules, Extracting Opinion Targets, Word Alignment Techniques, Extraction and Alignment*

1. INTRODUCTION

With Sentiment analysis, a cornerstone of natural language processing, has emerged as a pivotal tool for understanding consumer feedback and opinion mining in the vast landscape of online product reviews. With the exponential growth of e-commerce platforms and social media, the volume of user-generated content has skyrocketed, presenting both opportunities and challenges for businesses aiming to gauge customer sentiment effectively. Machine learning algorithms play a pivotal role in automating this process, leveraging techniques suchas text classification and sentiment scoring to sift through vast amounts of textual data and distill meaningful insights. In this context, sentiment analysis not only serves as a barometer for customer satisfaction but also informs crucial business decisions, ranging from product improvements to targeted marketing strategies. This study explores the application of machine learning in sentiment analysis of product reviews, highlighting its significance in the contemporary landscape of consumer-driven markets.

2. MODULES

- CO-EXTRACTING OPINION TARGETS & OPINION WORDS
- PARTIALLY SUPERVISED WORD ALIGNMENT MODEL

- CONSTRAINED HILL CLIMBING ALGORITHM
- WORD ALIGNMENT
- OPINION ASSOCIATION
- CO-EXTRACTING OPINION TARGETS AND OPINION WORDS
- FIND OPINION TARGETS & OPINION WORDS
- VIEW GRAPH & SENTIMENT CLASSIFICATION

2.1 Co-Extracting Opinion Targets and Opinion Words

This module involves the initial step of extracting opinion targets (entities or aspects being evaluated) and opinion words (adjectives or adverbs expressing sentiment) from the dataset provided for analysis. It sets the foundation for further sentiment analysis by identifying relevant entities and expressions of sentiment.

2.2 Partially Supervised Word Alignment Model

Utilizing a partially supervised approach, this module employs part-of-speech (POS) tagging to align words within the dataset, aiding in the identification of opinion targets and opinion words. By assigning appropriate POS tags to words, it facilitates subsequent steps in the sentiment analysis process.

2.3 Constrained Hill Climbing Algorithm

The constrained hill climbing algorithm is applied to iteratively extract candidate opinion targets and words from the dataset. By incorporating constraints derived from the partially supervised word alignment model, it refines the extraction process, improving the accuracy of candidate identification.

2.4 Word Alignment

This module focuses on aligning words within the dataset, ensuring coherence and consistency in the representation of opinions. By aligning words based on their syntactic and semantic relationships, it enhances the effectiveness of subsequent sentiment analysis task and they will be providing the proper alignment for the entire dataset so they can aligned.

2.5 Opinion Associtaion

This module, the association between opinion words and targets is quantified, enabling the calculation of candidate confidence scores. By analysing the relationships between words and targets, it assigns confidence levels to extracted candidates, aiding in the prioritization of relevant entities and expressions.

2.6 Co-Extracting Targets and Opinion Words

Building upon the initial co-extraction step, this module further refines candidate extraction by computing confidence scores based on the opinion association analysis. By integrating candidate confidence calculations, it enhances the accuracy and reliability of extracted opinion targets and words.

2.7 Find Opinion Targets and Opinion Words

This module focuses on the identification and extraction of opinion targets and words from the dataset. Leveraging the insights gained from previous steps, it systematically identifies relevant entities and sentiment expressions, laying the groundwork for sentiment analysis

2.8 VIEW GRAPH & SENTIMENT CLASSIFICATION

The final module involves visualizing the graph of associated opinions and performing sentiment classification. By visualizing the relationships between opinion targets and words and applying sentiment analysis techniques, it provides actionable insights into customer sentiment on ecommerce platforms

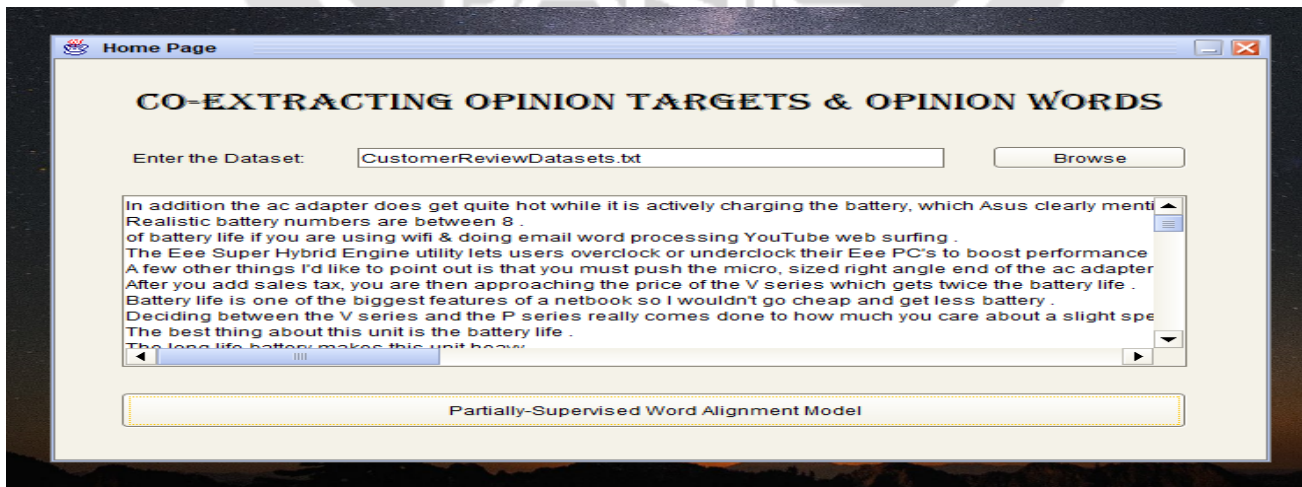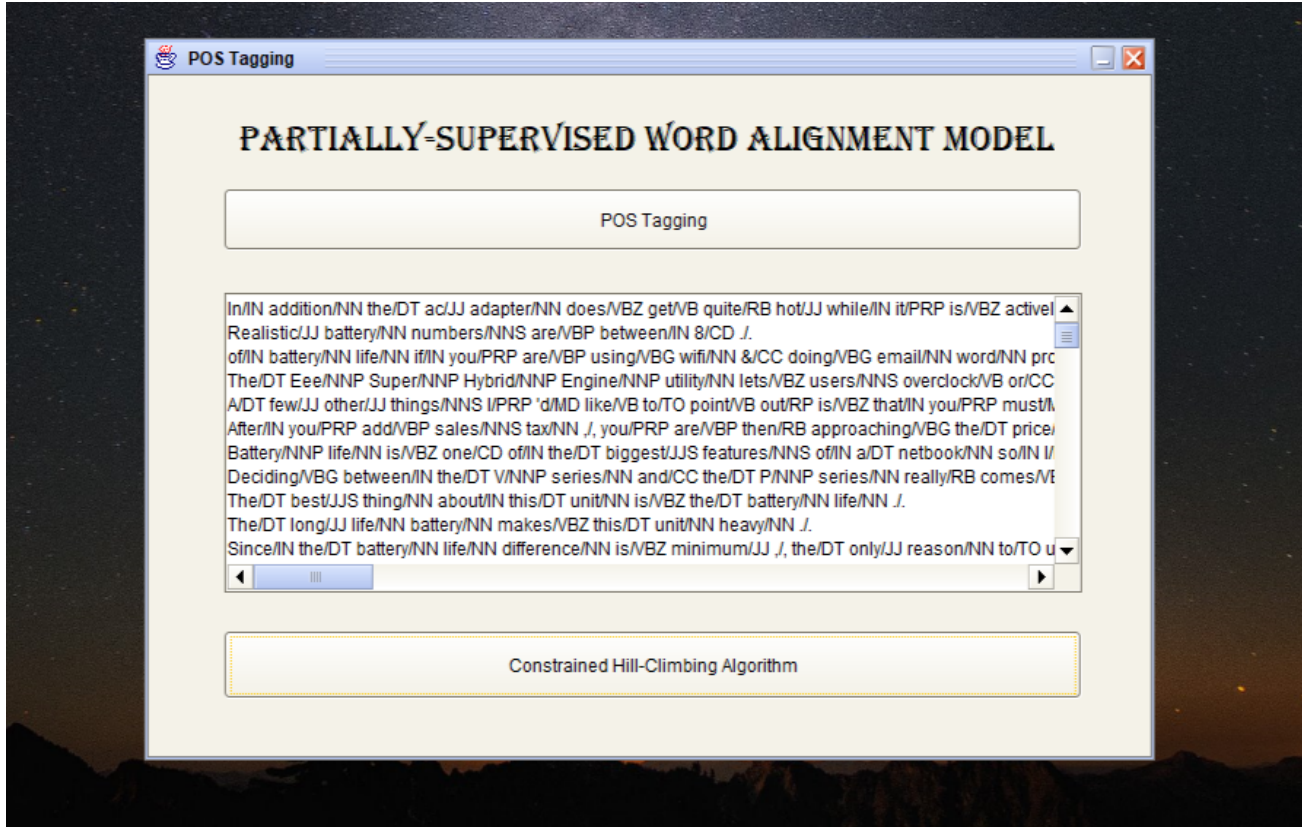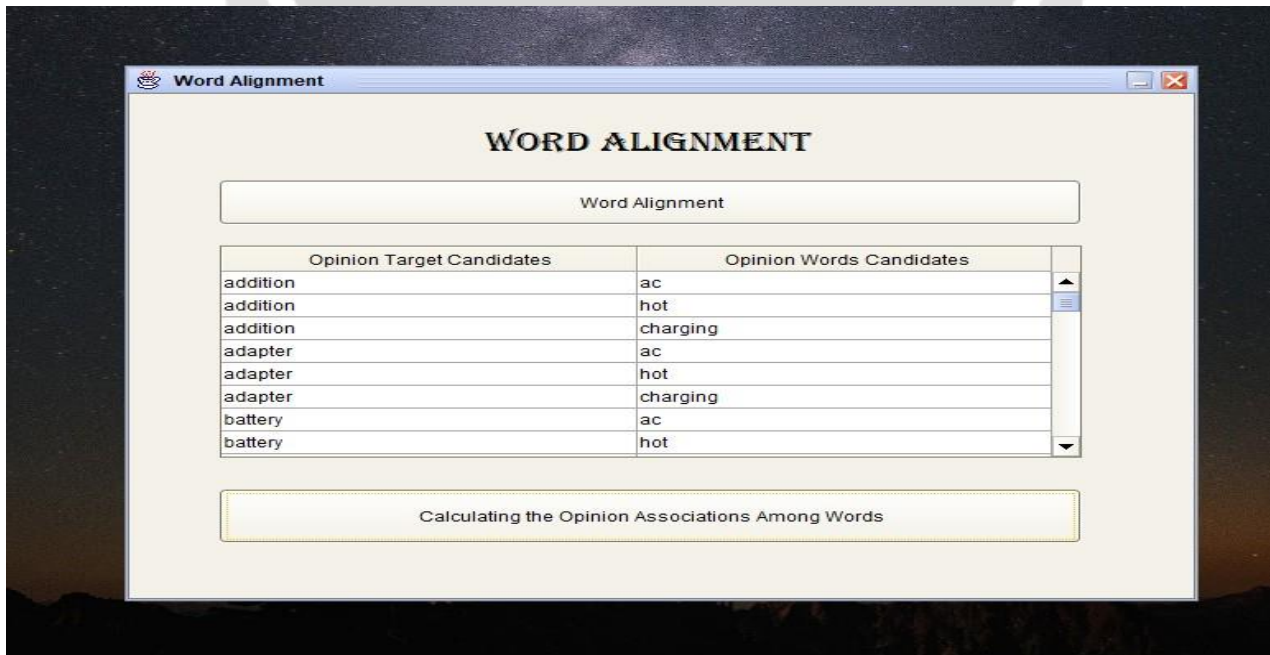### 3.SYSTEM ARCHITECTURE
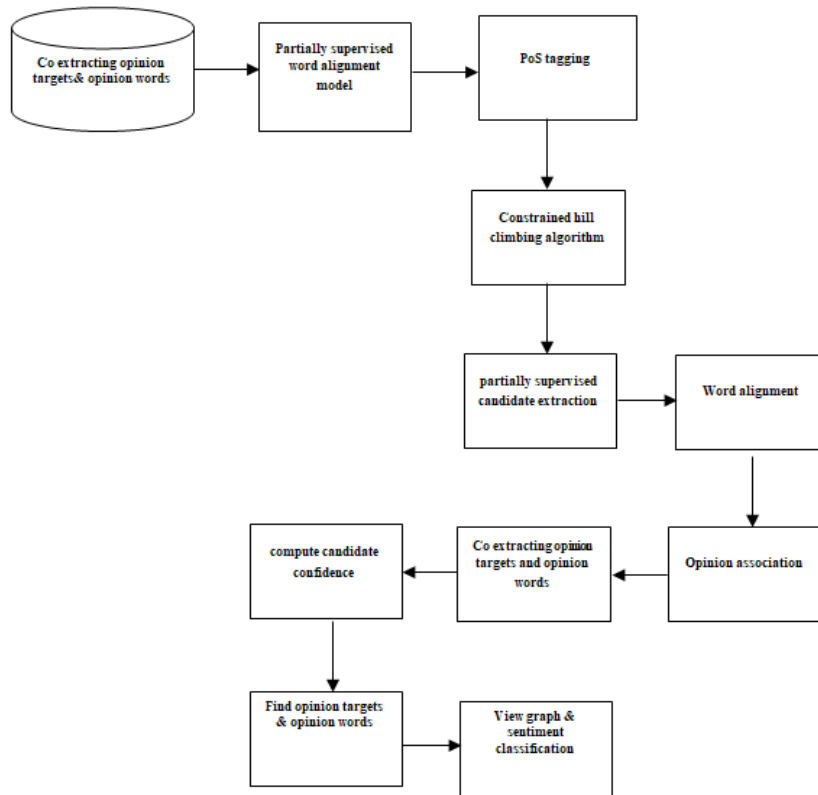
4.RESULTS

Fig-1

Fig-2

Fig-3

Fig-4
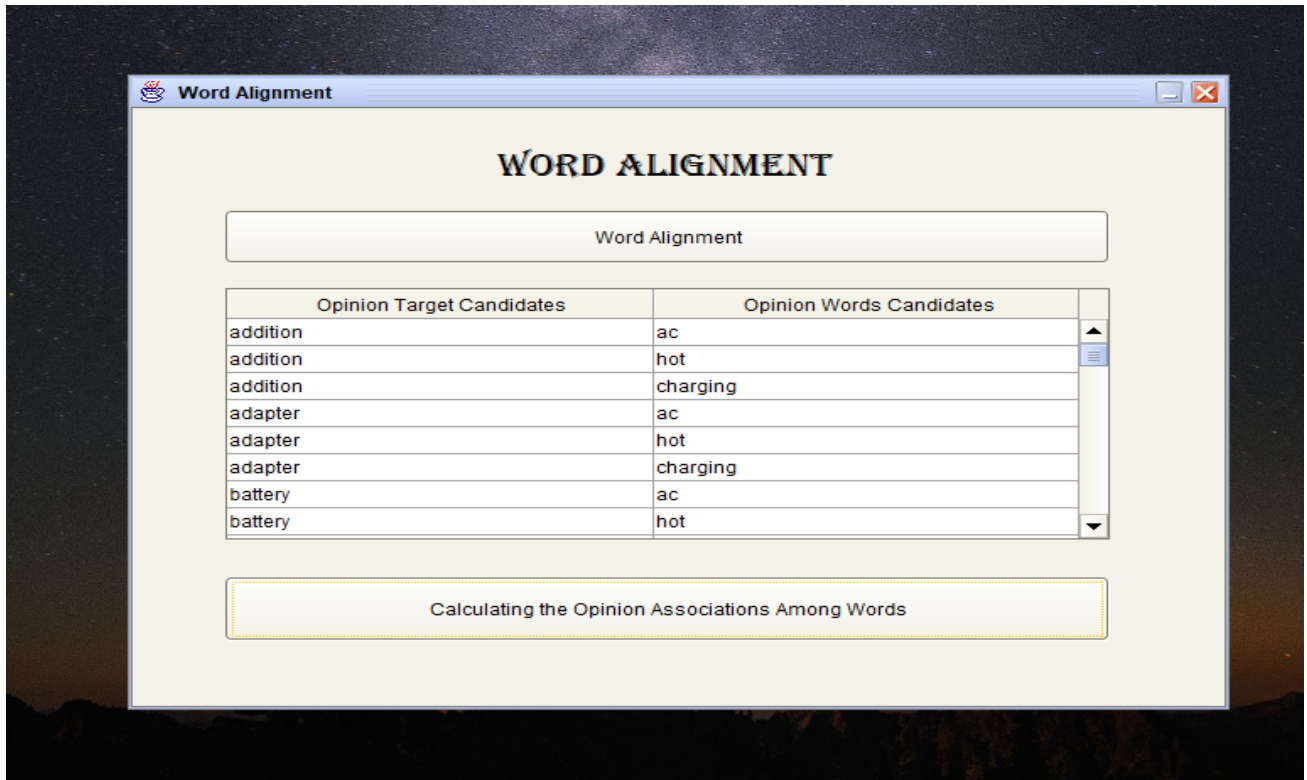
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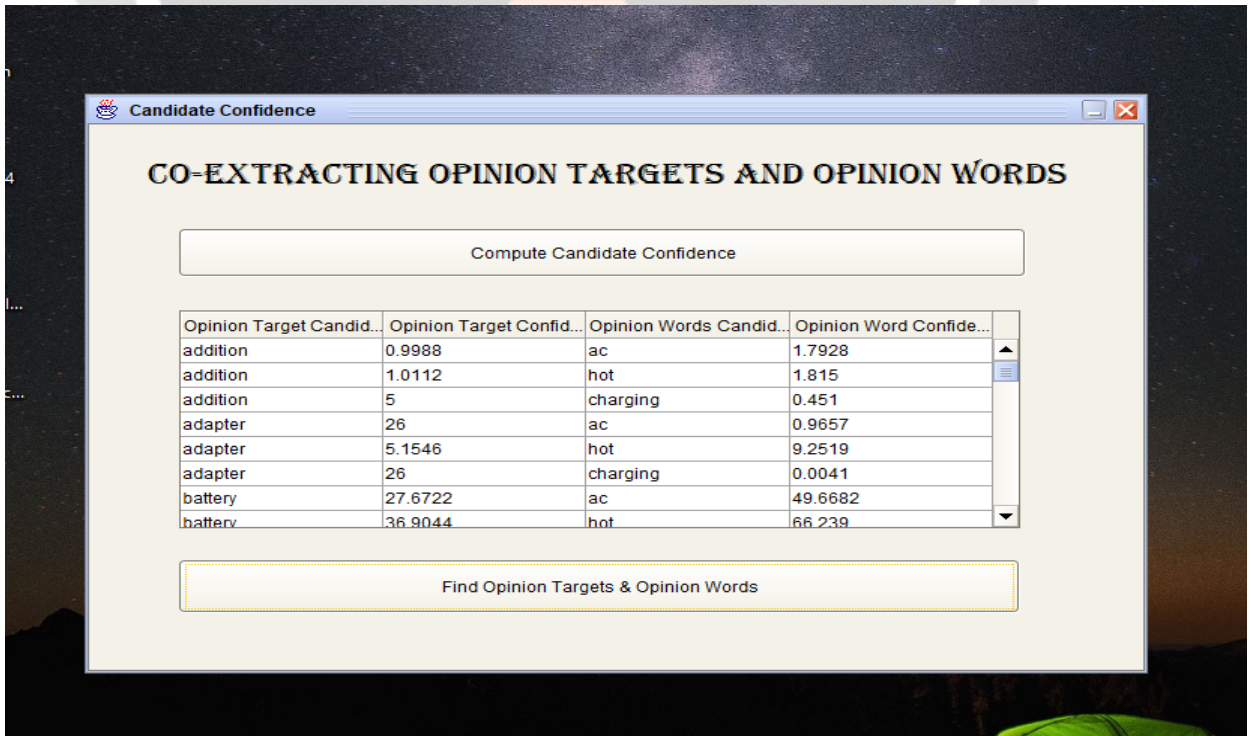
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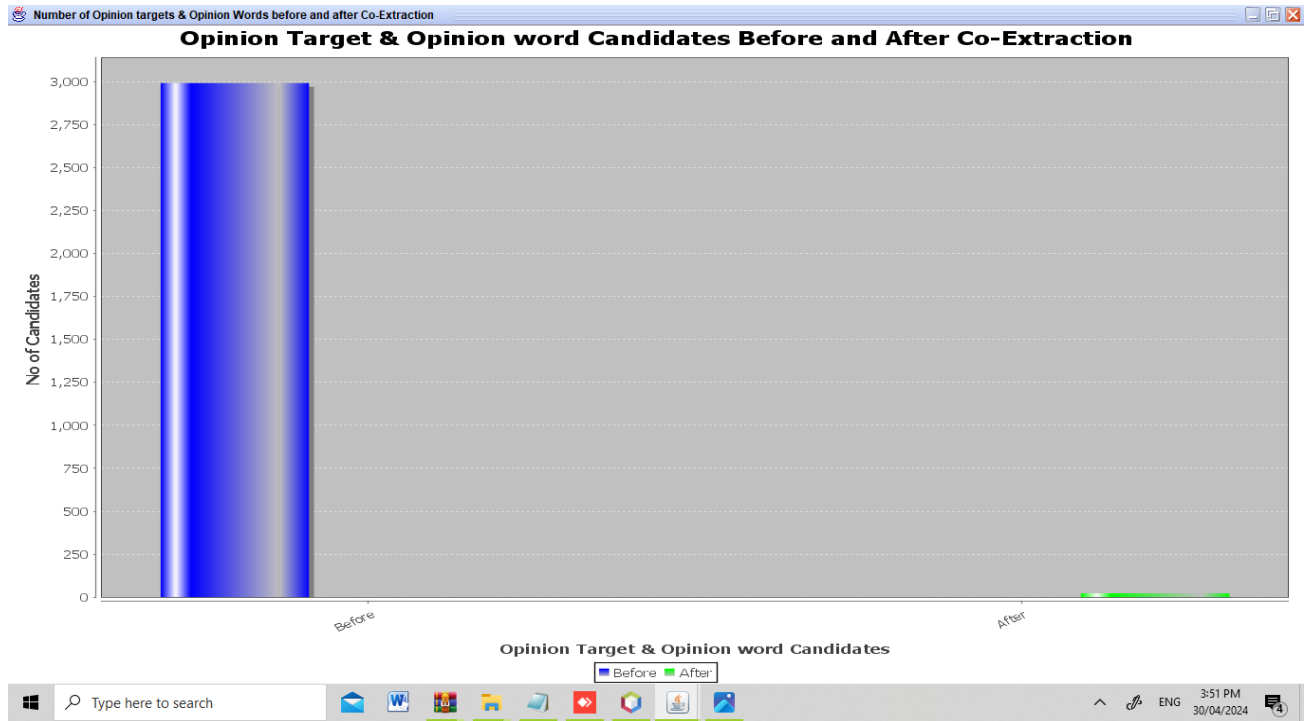
Opinion Target & Opinion word Candidates Before and After Co-Extraction

Fig-7

SENTIMENT CLASSIFICATION

Sentiment Classification

in addition the ac adapter does get quite hot while it is actively charging the battery which asus clearly mentions in the user manual so one
realistic battery numbers are between 8 --> Negative
of battery life if you are using wifi   doing email word processing youtube web surfing --> Negative
the eee super hybrid engine utility lets users overclock or underclock their eee pc s to boost performance or provide better battery life depend
a few other things i d like to point out is that you must push the micro sized right angle end of the ac adapter until it snaps in place or the bat
after you add sales tax you are then approaching the price of the v series which gets twice the battery life --> Negative
battery life is one of the biggest features of a netbook so i wouldn t go cheap and get less battery --> Negative
deciding between the v series and the p series really comes done to how much you care about a slight speed different a small battery life di
the best thing about this unit is the battery life --> Negative
the long life battery makes this unit heavy --> Negative
since the battery life difference is minimum the only reason to upgrade would be to get the better keyboard --> Negative
for 30 40 more you get one less usb port you get covered usb ports which is annoying and you get less than half the battery life --> Negativ
it has the longest battery life of any notebook --> Negative
while my 1005ha works like a charm i personally know several folks that have experienced issues with the battery and or power supply --> N
eventually i noticed that most of these critical reviews referred to the battery or to the charging brick and most of these were describing what

5.CONCLUSIONS

In conclusion, the proposed sentiment analysis framework offers a robust solution for extracting and analyzing customer opinions on e-commerce platforms. By integrating modules for efficient extraction, alignment, and association of opinion targets and words, the system provides actionable insights into customer sentiment trends. With its user-friendly input design, visually informative output, and rigorous testing, the system enables e-commerce platforms to make informed decisions and enhance customer satisfaction. As sentiment analysis continues to play a crucial role in understanding consumer behavior, this framework serves as a valuable tool for leveraging customer feedback to drive business success in the dynamic digital marketplace.

6.REFERENCES

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