INTEL PRODUCTS SENTIMENT ANALYSIS FROM ONLINE REVIEWS

ABSTRACT:

This study aims to analyse user reviews of Intel processors (i3, i5, i7, i9 of 12th,13th and 14th generations) to understand public sentiment towards these products. Sentiment analysis, a method of computationally identifying and categorizing opinions expressed in text, is employed to evaluate reviews collected from various online platforms. The goal is to identify trends and insights that can inform both consumers and manufacturers. The project involves collecting a substantial dataset of reviews, preprocessing the text, and employing various sentiment analysis techniques. The results provide a detailed overview of user satisfaction and areas for potential improvement in Intel processors.

INTRODUCTION:

- **Project Background**: User reviews are crucial for evaluating the performance and reliability of Intel processors. They provide real-world insights from consumers, influencing purchasing decisions and guiding manufacturers in product development.

- **Objective**: The primary objective of this sentiment analysis project is to assess the overall sentiment of user reviews for Intel processors, identify common themes and concerns, and provide actionable insights for stakeholders.

- **Scope**: This study focuses on user reviews from popular e-commerce platforms and tech forums, covering a time frame from the past five years to ensure relevance and comprehensiveness.

LITERATURE REVIEW:

- **Related Work**: Previous research has explored sentiment analysis in various domains, including product reviews for tech gadgets, showcasing different methodologies and their effectiveness in extracting meaningful insights from textual data.

- **Sentiment Analysis Techniques**: Techniques range from traditional rule-based approaches to advanced machine learning and deep learning models. Tools like NLTK, scikit-learn, and TensorFlow have been widely used in these studies.

DATA COLLECTION:

- **Data Sources**: User reviews were sourced from Amazon, Newegg, and tech forums known for detailed product discussions.

- **Data Acquisition**: Reviews were collected using web scraping techniques and APIs provided by these platforms.

- **Data Description**: The dataset comprises lakhs of reviews, spanning the last five years, including features such as review text, ratings, and dates.

DATA PREPROCESSING:

- **Cleaning**: Steps included removing duplicates, filtering out non-relevant content, and handling missing values to ensure data quality.

- **Text Processing**: Techniques like tokenization, stemming, lemmatization, and stopword removal were employed to prepare the text for analysis.

SENTIMENT ANALYSIS METHODOLOGY:

- **Approach**: The project utilized a combination of rule-based and machine learning approaches to capture sentiment accurately.

- **Model Selection**: The RoBERTa (Robustly optimized BERT approach) model was selected for its state-of-the-art performance in sentiment analysis tasks. Additionally, the VADER (Valence Aware Dictionary and sEntiment Reasoner) model was used for comparison due to its effectiveness in analyzing social media text.

- **Feature Extraction**: For RoBERTa, word embeddings inherent to the model were used, while VADER operates based on a lexicon and rule-based approach for feature extraction.

IMPLEMENTATION:

- **Tools and Libraries**: Python was the primary programming language, with libraries like NLTK, scikit-learn, and Tensor Flow facilitating various aspects of the analysis.

- **Model Training**: The dataset was split into training and testing sets, with hyper parameters tuned for optimal performance. Training times varied based on model complexity.

- **Evaluation Metrics**: Accuracy, precision, recall, and F1 score were used to evaluate model performance, providing a comprehensive view of their effectiveness.

RESULT AND DISCUSSION:

- **Model Performance**: The performance metrics for each model were presented, highlighting the strengths and weaknesses of different approaches.

- **Sentiment Distribution**: An analysis of sentiment distribution across reviews revealed trends in user satisfaction and areas of concern.

- **Insights**: Key findings included common themes in positive and negative reviews, offering insights into user priorities and potential improvements for Intel processors.

CONCLUSION:

- **Summary**: The study provided a detailed analysis of user sentiment towards Intel processors, highlighting overall satisfaction and key areas for improvement.
- **Challenges**: Challenges included handling large volumes of data, ensuring data quality, and selecting the most effective models for sentiment analysis.
- **Future Work**: Future research could explore more advanced deep learning techniques, expand the scope to include other brands, and refine methodologies for better accuracy and insights.