SENTIMENTAL ANALYSIS FOR WALMART SERVICES

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MOTIVATION / INTRODUCTION

- In the current digital era, customer reviews influence business strategies and service quality improvement.
- Walmart, as a major retail chain, receives a vast number of customer reviews daily across various service areas including customer service, delivery and orders, in-store experience, and pricing and billing, highlighting the need to analyze these diverse aspects.
- This study employs aspect-based sentiment analysis (ABSA) and zero-shot classification using models like Facebook's BART MNLI and CardiffNLP's Twitter-RoBERTa to go beyond basic sentiment classification and understand the specific sentiments and emotions
- This approach aims to provide Walmart with data-driven insights from customer feedback to facilitate more effective decision-making, optimize their services, enhance customer satisfaction, and ultimately improve their retail operations.

OBJECTIVES

- To leverage customer-generated content from the growth of e-business and the importance of customer reviews for business strategies.
- To analyze the large volume of daily customer feedback received by Walmart across diverse service areas such as customer service and delivery.
- To provide Walmart with data-driven insights to support better decision-making, optimize service delivery, and enhance overall customer satisfaction.
- To enable Walmart to assess service quality, address customer pain points, and improve its retail operations based on comprehensive sentiment understanding

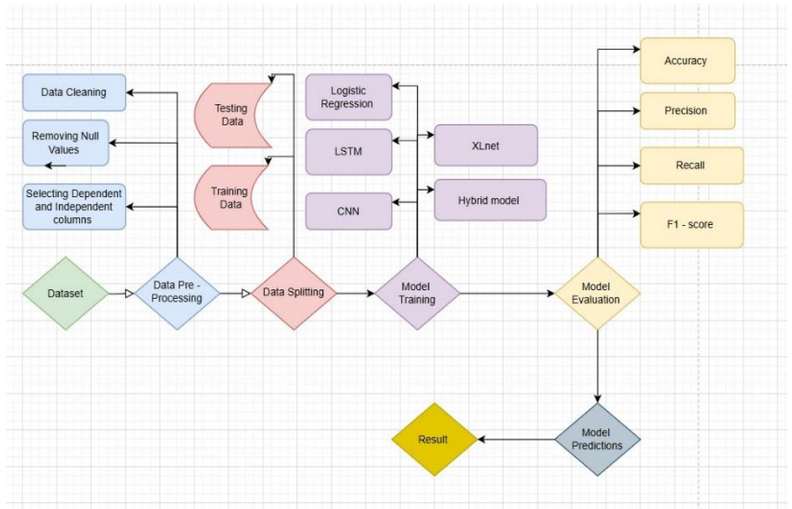
SCOPE OF THE PROJECT

Implements multi-model sentiment classification using customer reviews to evaluate Walmart services. Combines deep learning and transformer models and a hybrid model for emotion and aspect-level analysis, applies zero-shot learning and ABSA for fine-grained insights, and supports deployment for real-time feedback monitoring in retail platforms.

METHODOLOGY

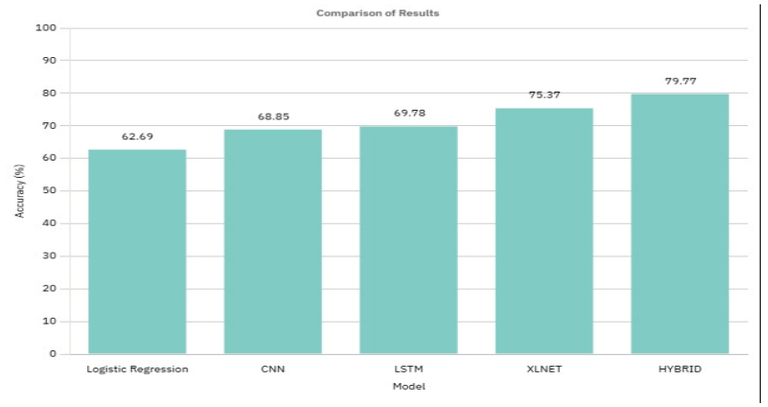
- Collect Walmart customer reviews via web scraping from Trustpilot and preprocess data using tokenization, cleaning, and normalization techniques.
- Classify emotions using zero-shot learning with the BART-large-MNLI model across ten emotion labels.
- Apply machine learning and deep learning models like Logistic Regression, LSTM, CNN and a Bi-LSTM + BERT hybrid for emotion detection.
- Perform aspect-based sentiment analysis using Twitter-RoBERTa to assess polarity across key service aspects.
- Evaluate model performance using metrics such as accuracy, precision, recall, and F1-score.
- Compare models to determine the most effective architecture for analyzing service-based sentiment trends.

ARCHITECTURE



The project architecture follows a structured machine learning pipeline, starting with data preprocessing and splitting, followed by training various models including LSTM, CNN, and transformer-based models like XLNet, and a hybrid model. The system evaluates model performance using standard metrics and provides predictions for emotion classification tasks.

RESULTS



CONCLUSION

The project effectively demonstrates the use of advanced NLP and deep learning models for extracting meaningful insights from customer reviews. By combining zero-shot classification and aspect-based sentiment analysis, it captures nuanced emotions and service-specific feedback. This approach enables data-driven decision-making, helping Walmart enhance customer satisfaction, optimize services, and maintain a competitive edge in the retail sector.

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