

## INTRODUCTION

A fine-grained sentiment analysis task that Extract and analyze sentiment polarity (positive, negative, neutral) for specific aspects (features/topics) in text reviews using state-of-the-art transformer models (Roberta/BERT).[1]

Traditional sentiment analysis focuses on the overall sentiment, while ABSA provides targeted insights, making it highly valuable in product reviews, social media, and customer feedback analysis.[3]

## TECHNOLOGIES



## LITERATURE REVIEW

Marcacini and Silva (2021) employed disentangled attention in BERT to enhance aspect-based sentiment analysis, achieving state-of-the-art results. Haining Wang et al. (2024) introduced RSDA, employing NLI and paraphrasing, enhancing cross-domain ABSA performance. Abdessamad Benlahbib and Achraf Boumhidi (2023) applied Transformer models classifying African tweets, tackling sentiment challenges.

## STATE-OF-THE-ART

BERT: Provides deep contextual representations for nuanced sentiment extraction.[2]

RoBERTa: A robustly optimized variant of BERT that improves performance by fine-tuning on extensive datasets.[2]

## EARLY INDICATORS

Initial results show RoBERTa achieves higher accuracy and F1 on SemEval ABSA benchmarks compared to BERT and LSTM models. RoBERTa outperforms BERT in handling implicit aspects and nuanced sentiments.

## REFERENCES

- Wang, H., He, K., Li, B., Chen, L., Li, F., Han, X., Teng, C., & Ji, D. (2024). Refining and synthesis: A simple yet effective data augmentation framework for cross-domain aspect-based sentiment analysis. Findings of the Association for Computational Linguistics: ACL 2024, 10318-10329. [Cite the references used in the study.](#)
- Benlahbib, A., & Boumhidi, A. (2023). NLP-LISAC at SemEval-2023 Task 12: Sentiment Analysis for Tweets expressed in African languages via Transformer-based Models. Proceedings of the 17th International Workshop on Semantic Evaluation (SemEval-2023), 199-204, available: <https://aclanthology.org/2023.semeval-1.28.pdf>
- Marcacini, R., & Silva, E. H. (2021). Aspect-based Sentiment Analysis using BERT with Disentangled Attention. Proceedings of the LatinX in AI (LXAI) Workshop at ICML 2021, source: [10.52591/lxai2021072416](https://arxiv.org/abs/2021.10.52591/lxai2021072416)

## RESEARCH QUESTION?

Aspect based sentiment analysis on review dataset using transformer model( RoBERTa model)?

## METHODOLOGY

Describe the overall research strategy and the rationale for the approach chosen to address the ABSA. State the following:

- Collect Dataset/Review Dataset
- Data Preprocessing
- Sentiment Classification using RoBERTa/Bert
- Aspect based Analysis

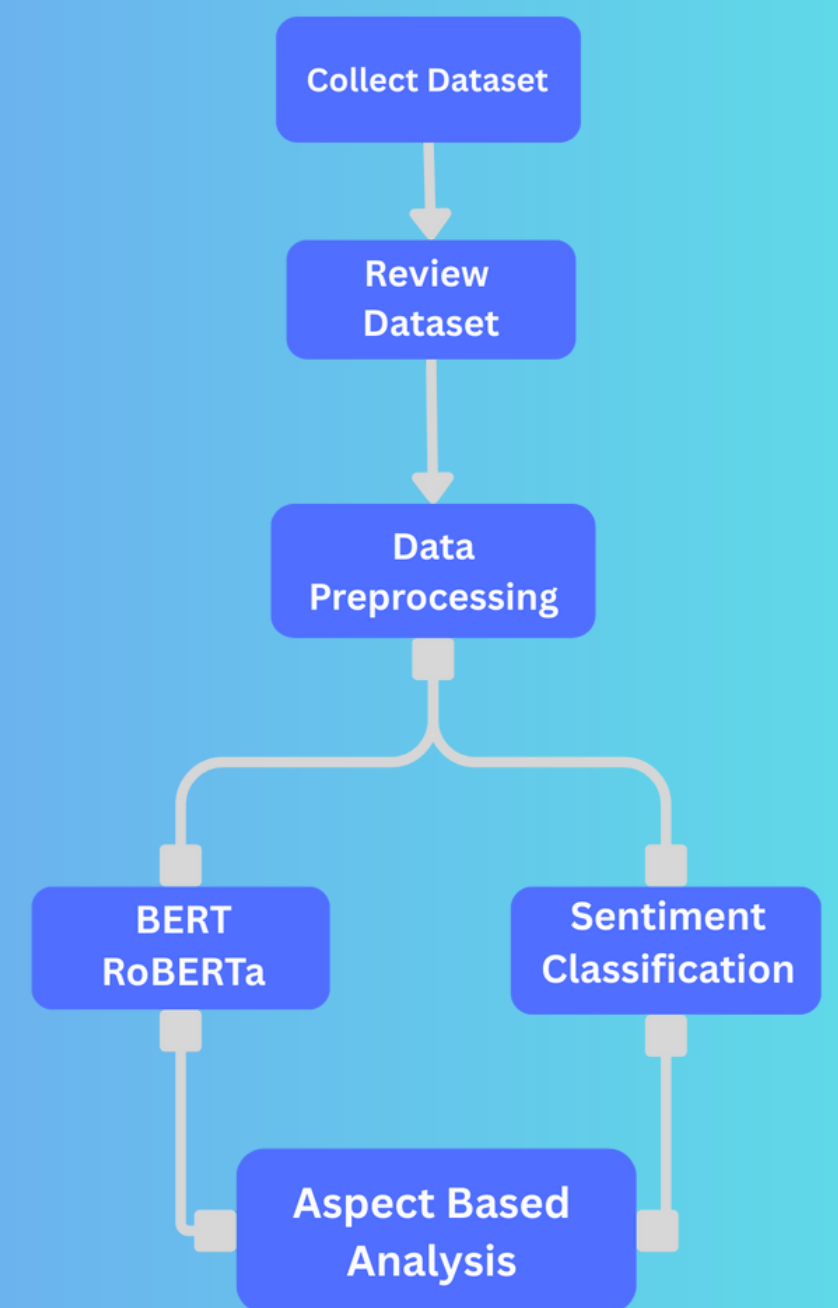


Fig1. Methodology explained.

## NEXT STEP

Next Steps:

- Expand evaluation on multilingual ABSA text data( i.e Tweets data, feedbacks)
- Explore domain adaptation via continual pretraining