UNIVERSITI TEKNOLOGI MARA

SENTIMENT ANALYSIS FOR ONLINE FASHION CLOTHING REVIEW USING SUPPORT VECTOR MACHINE (SVM) ALGORITHM

MUHAMMAD HAKAM MUSAWI BIN MOHD HAMDI

BACHELOR OF COMPUTER SCIENCE (Hons.)

JANUARY 2025

ACKNOWLEDGEMENT

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this research within the time duration given. Firstly, my special thanks goes to my supervisor, Madam Ummu Fatihah Binti Mohd Bahrin because of her guidance. Special appreciation also goes to my beloved parents that always support me in my studying. Last but not least, I would like to give my gratitude to myself for believing in myself and manage to finish this proposal.

ABSTRACT

Online fashion shopping has become increasingly popular, with customer reviews playing a crucial role in influencing purchasing decisions. However, sentiment analysis of these reviews presents challenges due to noisy data, subjective language, and class imbalance. This study proposes a Support Vector Machine (SVM)-based sentiment analysis model to classify customer opinions on fashion clothing reviews efficiently. The methodology involves data preprocessing, feature extraction using Term Frequency-Inverse Document Frequency (TF-IDF), and classification using SVM. A dataset of 23,000 online fashion product reviews from Kaggle was used, and Synthetic Minority Over-sampling Technique (SMOTE) was applied to address class imbalance. The model's performance was evaluated using accuracy, precision, recall, and F1-score to ensure robust sentiment classification. The results demonstrate that the SVM model achieved an accuracy of 85.7%, an F1-score of 83.2%, and a precision of 84.5%, outperforming traditional sentiment classification methods such as Naïve Bayes and Logistic Regression. However, the model faced challenges in detecting negative sentiment, primarily due to ambiguous and mixed-review expressions. This study provides a scalable and effective sentiment analysis framework that enables fashion retailers to extract valuable customer insights and improve their product offerings. Future work should explore advanced deep learning models such as Bidirectional Encoder Representations from Transformers (BERT) and hybrid SVM-deep learning approaches to enhance classification performance and contextual sentiment understanding.

TABLE OF CONTENTS