UNIVERSITI TEKNOLOGI MARA

IDENTIFYING SUICIDAL IDEATION THROUGH TWITTER SENTIMENT ANALYSIS USING NAÏVE BAYES

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BACHELOR OF COMPUTER SCIENCE (HONS.)

AUGUST 2023

ACKNOWLEDGEMENT

Alhamdulillah, praises and thanks to Allah S.W.T because of His Almighty and His utmost blessings, I was able to finish this research within the time duration given. First and foremost, I would like to express my profound gratitude to my supervisor, Mr. Khairul Nizam bin Abd Halim for his precious time and nonstop efforts he provided throughout two whole semesters. His useful advice and suggestions were really helpful to me during the project's completion to make sure of the excellence and quality of this project.

Additionally, I extend my gratitude to my lecturer, Dr. Noor Hasimah Binti Ibrahim Teo, for her remarkable support throughout the entire duration of my project completion, making sure I received assistance whenever it was required. I would also like to express my special thanks to my examiner, Madam Salehah Binti Hamzah, for diligently pointing out the flaws and mistakes in my work, offering valuable guidance, and providing insightful comments that greatly enhanced the quality of this project.

A special thank you also goes to my beloved parents and family for all of the endless prayers, support, encouragement, and especially for always having faith in me. Last but not least, I would like to thank all my friends especially Hana, Muna Qhaira, Nur Aisyah Wardina, Muhammad Hafeez Hakimi and Muhd Syukri Hisyam who have assisted in various ways upon completing this project.

ABSTRACT

People are more comfortable sharing their thoughts on social media rather than someone in person. Twitter is increasingly investigated as a means of detecting mental health status, including depression and suicidality, in the population. Individuals who suffer from suicidal ideation frequently express their views and ideas on social media. It is essential to develop a machine learning system for early detection of suicidal ideation by analyzing his or her posts on social media. The prevailing methods of identifying and addressing suicidal content on social media exhibit limitations. Relying on human experts for identification is both costly and time-consuming. Additionally, the vast volume of data on platforms like Twitter makes manual outreach impractical. Existing machine learning models for sentiment analysis and suicide prediction lack a comprehensive user-friendliness system for the end users. Thus, this project aims to design, develop, and evaluate a web-based application utilizing sentiment analysis, specifically employing the Naïve Bayes algorithm, to identify and analyze suicidal ideation within Twitter posts. By harnessing natural language processing techniques and data visualization tools, the project seeks to provide a user-friendly solution for early detection and prevention of suicidal intentions expressed on social media. The goal is to empower suicide prevention organizations and concerned individuals with an efficient and accessible means of taking timely actions toward individuals at risk. The result of the data analysis is visualized into a web application system to enable the analysis results to be interpretable and readable by the user using Plotly visualization tool. Testing phases have shown that the classifier successfully classified tweets' sentiments with 84.43% accuracy. Functionality testing is done to ensure that all the requirements are met. System usability testing is also done to ensure that the system flow is as intended and from the System Usability Scale (SUS), the system achieved an average final score of 87%. The future work that can be apply into this project is to include other languages other than English to identify people who are having suicidal ideation from different countries.

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