Deep Learning approaches for the detection of Suicidal Tendencies on Social Media

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Abstract

Mental Disorders and Suicide are considered global health problems faced by many countries worldwide. Even though advancements have been made to improve mental well-being through research, there is room for improvement. And, social media platforms have transformed traditional communication methods by allowing users worldwide to communicate instantly, openly, and frequently. People use Social Media to express their opinions and share their personal stories and struggles. Negative feelings that express stress, hardships, thoughts of death and self-harming are widespread in Social Media, especially among the younger generations. Therefore, this project aims to develop an automated framework to detect suicidal ideations using Natural Language Processing (NLP), Traditional Machine Learning (ML) algorithms including Convolutional Neural Networks (CNN), Bidirectional Long-Short Term Memory (BiLSTM), and Word Embedding. It achieves strong results, including a 94.5% accuracy in the BiLSTM model with triple word embedding. This framework addresses these issues by extracting meaningful and context-related features from posts that capture contextual and semantic aspects. Thus, This project aims to identify the individuals who may be at risk of suicide and eventually dissuade others from self-harming and contribute to mitigate the spread of suicidal ideations on social media.

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