ABSTRACT FOR ‘MHECON2019’

Title: Can Suicide Risks Be Predicted? -Analyzing Indicators of Intense Psychological Pain based on Social Media activity as trigger for Suicidal Thoughts

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Introduction:

Studies have suggested that the interplay of intrapersonal factors plays a major and more significant role than interpersonal factors in the elevation of emotions and distortion of cognition to the levels where it exceeds the individual's bearing capacity and suicide becomes a possible option. The ongoing distress of an individual's intrapersonal factors is reflected in the individual's interaction with the world, especially with the social media. The changes in the social media activity provides a greater insight towards understanding the psychological pain the individual might be suffering.

Objectives:

To study the Social Media Activity of individuals who have once or more attempted suicide over a period of stipulated time to identify onset of indicators for psychological pain.

Methods:

The study was conducted using Data Mining and Natural Language Processing Tools. Social Media Sites like Facebook, Twitter and microblogs like Sino Weibo are scrapped to find feed of users who have mentioned the words like – “attempted suicide”, “suicide”, “suicide survivor” etc. to identify a list of people who are suicide survivors and have been vocal regarding their emotions on these platforms. Natural Language Processing is performed to generate a Wordcloud with most frequent keywords. These keywords are examined on a psycholinguistic level to determine their impact in reinforcing beliefs of suicide. Word Embedding model is also built to find similarities of these keywords against a manual-defined corpus of indicators for psychological pain. Finally, for each user scrapped and temporal model of sentiment analysis is run to understand the temporal changes in their expressed sentiments.

Results: Distinct patterns were observed in the temporal nature of the sentiment analysis of the tweets and social media feed obtained of the users of attempted suicide survivors. The similarity of keywords used in the diction of such individuals is observed with the words indicating presence of psychological pain. The decrease in the volume of social media activity is indicated by the decreasing frequency of click rate and reduced volume of search history.

Conclusion: Our study provides a baseline model to build integrated multimodal systems that can provide an alert notification to the parents, relatives, friends and emergency services when the social media activity of the individual under study crosses a threshold of showing indicators of psychological pain. This system can be integrated for individuals with high risk of suicidal behavior as an effect of other underlying disease or as a possibility due to previous attempts.

Key words: natural language processing, social media activity, psychological pain, word embeddings, suicide risk prediction, suicide prevention, sentiment analysis