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Suicide ideation detection using social media posts and comments

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Suicide ideation detection using social media posts and comments

Minimizing False Positives

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According to WHO, suicide is the second leading cause of death for 15–29-year-old and death by suicide occurs every forty seconds which means that by the time you have finished reading this sentence, someone, somewhere has ended his/her life and has impacted approximately 138 other lives. With the advent of tools and technologies, there has been a call to the IS researchers to do research that has a significant positive impact on society. Researchers across disciplines have presented excellent ideas to identify signs of emotional distress on social media using machine learning-based or rule-based classification algorithms (Chau et al., 2020). However, a common trend in them is a reportedly high number of incorrect classifications, especially false positives. For e.g., most of the machine learning based classifiers would classify the post “Oh my god! My dog ate my homework. I want to kill myself. Aghh!!” as a suicidal post. On the other hand, a human being can understand that the above post is not alarming.

We posit that comments on the post are a key piece in understanding which post is potentially more harmful. Comments like “Trust me it’s a momentary thought. Just hang on” or “Tell me where you are right now” are clear indicators of the suicidal/self-harm intent whereas a “LOL. I understand the feeling. Last week my cat broke my lamp” can help the machine learn that the original post had intended pun.

We will scrape data from Reddit posts ([reddit.com](https://www.reddit.com)). We have also collected posts and comments from Facebook and reddit which are non-suicidal. We use LIWC to collect the list of words indicating suicidal intention and self-harm. A classifier is then trained to label posts that include keywords or phrases indicating thoughts of self-harm. We created two text classifiers: one predicting the main text of posts, and another the comments. National Library of medicine reports that most suicides happen on Monday followed by Sunday and fewest happen between 0401 to 0800. To account for this, we combine the score of the two text classifiers with two other numerical features -- the time of day and day of the week and provide these as inputs to a random forest learning algorithm, which specializes in learning using numerical features. We further fine tune our model by incorporating some of the warning signs provided by the national suicide prevention lifeline. Our work is unique in using the value that lies in the comments section of a post on social media indicating self-harm/ suicidal thoughts.

References

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