Jun Chen
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Summary of A New Method for Discovering Daily Depression from Tweets to Monitor Peoples Depression Status

Problem Statement:

Mental health illness prevention is popular all over the world, and more than 300 million people are involved. It is complicated to identify people's mental health illness. Some people do not agree that they have a mental health illness. Some people do not know that they have mental health illness. The other people do not know when they have mental health illness. Nowadays, more and more people use social media to communicate with others. By using social media, young people who have mental illness increase by 70%.

Proposed Solution:

By analyzing Tweets and identifying the antonyms for seven keywords, which are popular negative words, the authors can calculate accuracy, sensitivity, specificity, precision, negative predictive rate, false-positive rate, false discovery rate, F-1 score, and Mathews Correlation Co-efficient. Then, the authors can use these evaluation parameters to evaluate the performance. The authors also use a new formula, which is $C_I = F1/(1 - MCC)$, to find the gap between 'always correct' and 'practical value.'

Results:

MCC can be used as the parameter to evaluate the prediction. F1-score and accuracy are not suitable. New formula can also observe depression easily. According to the authors' table VI, people on 27-Mar-2019 are more depressive than 20-Mar-2019 and 4-Apr-2016.

Evaluation:

The advantage of this method is that the difference between MCC and F1-score is too small, but the new method can be observed easily. By using this new formula, people can identify depression easily.

However, the disadvantage is that the prediction is based on the seven keywords and the antonyms for the seven keywords. If people use some positive words to cheer their up every day, it will not predict that the people have mental health illness. If the people use some negative words and positive words together in several days, the method may also consider that the people may have mental health illness.

Synthesis:

It is tough to identify whether people's tweets can represent their moods or mental status, but the authors should consider this and filter some useless tweets. Besides, some people post some pictures every day but do not use those negative words. The authors should think about whether the picture can represent the mental status of those people. Also, some people post several short videos every day without using negative words. The authors need to consider whether people are sad in the video.

Reference:

S. T. Sadasivuni and Y. Zhang, "A New Method for Discovering Daily Depression from Tweets to Monitor Peoples Depression Status," 2020 IEEE International Conference on Humanized Computing and Communication with Artificial Intelligence (HCCAI), Irvine, CA, USA, 2020, pp. 47-50, doi: 10.1109/HCCAI49649.2020.00013.