

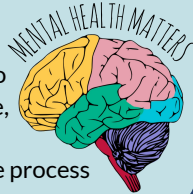
MENTAL HEALTH ANALYSIS USING MACHINE LEARNING

Problem Statement

Using the Depression, Anxiety and Stress Scales (DASS-21) questionnaire in order to predict anxiety, depression and stress using various classification algorithms.

Motivation

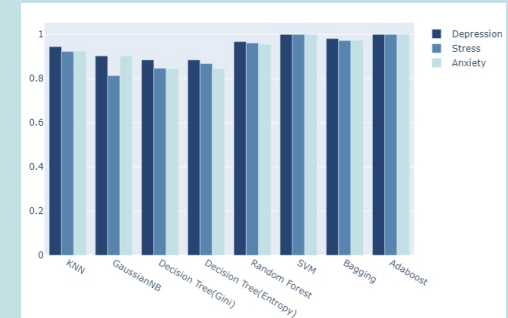
As a result of modern lifestyles, Many people are suffering from various forms of psychological health problems. Anxiety, depression, and stress all have certain characteristics. Generally, psychiatrists measure anxiety, depression, and stress using questionnaires such as the DASS42 and DASS21, since people who suffer from anxiety, depression, or stress are typically unwilling to share their symptoms. Therefore, we thought that with the help of machine learning we can ease the process



Methodology

- We started by using a kaggle dataset ,depression-anxiety-stress-scales-responses , which were the DASS 42 form's responses of people around the globe.
- It featured a total set of 40000+ rows which we employed as our backend to train and find which machine learning model performs the best.
- The rows were filtered according to requirement.
- The unnecessary columns were dropped to maintain a dataset only with the essential features.
- We mapped the DASS42 to DASS21 to reduce the no. of questions,
- After the study and comprehension of the dataset, we utilised the best algorithms for the dataset which we developed by sending out the google form and obtaining 200+ responses.
- After classification, it aided us in evaluating the levels of depression, anxiety & stress of a candidate.
- This also worked well for aiding in visualizations.

Accuracy



Classification models were trained on the kaggle dataset to generate models for each algorithms so that the best algorithm can be later applied for predicting mental health levels in the survey we conducted using google forms.

Conclusion

We used 7 machine learning models to predict five severity levels of anxiety, depression, and stress. The models were KNN, Decision Tree, Naive Bayes, Random forest, SVM and 2 ensemble algorithms. Adaboost and SVM approach gave 100% accuracy for depression, anxiety and stress.

References

- Dataset : <https://www.kaggle.com/lucasgreenwell/depression-anxiety-stress-scales-responses>
- <https://doi.org/10.1016/j.procs.2020.03.442>
- <https://doi.org/10.1016/j.procs.2020.04.213>

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