



Multimodal Classification of Depression and Experimental Study of Multimodal Models

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DESCRIPTION

Patients with major medical conditions like cancer, stroke, and coronary artery disease frequently have depression as a co-morbid condition. Depression's symptoms are frequently overlooked and undervalued, despite the fact that they have a considerable impact on how the core illness develops. In this work, methods for automatically classifying depression signals from human talks using standards and multiple media were examined. The PRISMA guidelines were followed during the scoping review. As a result of the search, 1095 papers were found for the scoping review, 20 (8.26%) of which contained more than two modalities and three gave codes. The scope of this review includes random forests (RF), Long Short-Term Memory Networks (LSTM), and Supported Vector Machines (SVM) models (with gated and non-gated recurrent units) with various feature combinations.

People who suffer from significant medical conditions like cancer, stroke, and coronary artery disease frequently experience depression as a side effect. Depression's symptoms are generally minimised and ignored, despite the fact that they have a considerable impact on how the primary illness progresses. This study investigated and assessed the automatic, standardised, and multimodal classification of depression signals in human speech. The PRISMA recommendations were followed for the scoping review. 1095 documents were found in the scoping review's search results. 20 of these (8.26%) have more than two modalities and three given codes. The scope of this review includes Supported Vector Machines (SVM), random forests (RF), and Long Short-Term Memory Networks (LSTM).

The prevalence of depression is a global public health issue that is frighteningly on the rise. In fact, it was estimated that 28% of people globally would experience depression in 2021. One of the most typical co-morbidities for those with serious medical conditions is depression. For instance, issues with in-

flammation, the heart, the brain, and cancer). Poor medication adherence and co-occurring depression have a negative impact on a patient's Quality of Life (QoL). Additionally, it raises the cost of healthcare.

An alarmingly rising global public health concern is the prevalence of depression. In fact, it was predicted that depression will affect 28% of individuals worldwide in 2021. Depression is one of the co-morbidities that affect people with major medical conditions the most frequently for instance, problems with cancer, the heart, the brain, and inflammation. A patient's quality of life is negatively impacted by poor medication compliance and co-occurring depression (QoL). It also drives up the price of healthcare.

By offering a consistent and better differentiated representation of depressive diseases, these data have the potential to significantly enhance the discriminatory ability of AI systems. Future research should look into the relationship between the observable symptoms of depression and genetic or epigenetic variables, even though this information is not currently available. Explainable AI algorithms are also lacking, which would speed the incorporation of the results into clinical practise and greatly enhance their interpretability. Explainable AI or, at the very least, hybrid model algorithms may provide a means to reduce the amount of data that deep models need while still utilising their inherent correlations or modalities, according to real-world depression experts interactions.

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CONFLICT OF INTEREST

The author declares there is no conflict of interest in publishing this article has been read and approved by all named authors.

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