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A Novel Approach for Detection of Depression Using Speech Analysis by Applying Convolutional Neural Networks (CNN)

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Abstract: *Mental illness has now become more prevalent in the world. Depression is one such illness. As per World Health Organization (WHO), many individuals are likely to put up with depression, and that rate is globally increasing, especially at progressive age. The absence of objective measures and use of traditional techniques are not much effective in predicting mental health of an individual. Hence depression to be usually under-diagnosed but it is also most curable illness. Recent studies have revealed that speech is a sensible indicator of depression syndrome, this giving us an incentive to carry out depression diagnosis by using speech to form an associate degree objective measure. Building on the ideas, a supervised machine learning (ML) model using ensemble is built in identifying whether person is depressed or not by using audio attributes or features of audio datasets. The CNN is being used to train the useful attributes for depression classification from speech. The datasets used for the purpose of model training and testing are taken from Surrey Audio-Visual Expressed Emotion (SAVEE) and Toronto Emotional Speech Set (TESS). The features like MFCCs, spectrograms of the audio recordings and related depression criterion are extracted for audio classification using CNN model.*

Keywords: Convolutional Neural Network, Artificial Neural Networks, Mel Frequency Cepstral Coefficient, spectrograms, Speech, Affect, SAVEE, TESS.

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