UTILIZING MFCCS AND TEO-MFCCS TO CLASSIFY STRESS IN FEMALES USING SSNNA

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Abstract

All individuals are susceptible to experiencing stress in their everyday lives. Nevertheless, stress has a greater influence on females due to both biological and environmental factors. This study utilized female speeches to detect and classify stress and no stress in women. Using speech, composed of non-invasive and non-intrusive approaches, helps to identify stress better in females. A comparative analysis was conducted between Mel-frequency Cepstral Coefficients (MFCCs) and Teager Energy Operator- MFCCs (TEO-MFCCs) to determine the best speech feature for classifying emotions associated with stress and no-stress conditions for female voices. With the assistance of the Stress Speech Neural Network Architecture (SSNNA), an improved accuracy of 93.9% was achieved. This research showed that MFCCs enhanced higher-frequency components in stressed speech, distinguishing between stress and no-stress classes. This study shows that SSNNA achieved high

accuracy with 14 female voices, confirming its ability to function independently of speaker identity.

Author keywords

CNN; MFCCs; stress classification for females; stress detection via speech

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Abstract