Schizophrenia Diagnosis Support with Spectral and Cepstral Features of Speech

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Schizophrenia is a severe mental illness affecting over 20 million people worldwide, significantly impairing quality of life and daily functioning. Current diagnostic methods rely heavily on subjective assessments and interactions between doctors and patients, leaving room for potential misdiagnoses. Recent advancements in technology have introduced non-invasive, fast, and user-friendly approaches, such as machine learning, to support psychiatric diagnosis. In this study, spectral features extracted from speech samples of individuals with and without Schizophrenia were analyzed. Using an ensemble bagged tree model, we achieved an accuracy of 96.3%, a sensitivity of 94.6%, and an F1-score of 95.4%. These results highlight the potential of speech-based machine learning models as effective tools for aiding Schizophrenia diagnosis.

Keywords: Schizophrenia · Speech features · Machine Learning · Ensemble · Bagged tree model