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Augmentative and alternative communication method based on tongue clicking for mute disabilities (Article) (Open Access)

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Abstract

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This paper presents a pilot study for a novel application of converting tongue clicking sound to words for people with the inability to speak. 15 features of speech that are related to speech timing patterns, amplitude modulation, zero crossing and peak detection were extracted. The experiments were conducted with three different patterns using binary Support Vector Machine (SVM) classification with 10 recordings as training data and 10 recordings as development data. Peak size outperformed all features with 85% classification rate for pattern P1-P3 whereas multiple features produced 100% classification rate for P1-P2 and P2-P3. A GUI based system was developed to validate the trained classifier. Multiclass SVM were constructed based on the best features obtained from binary SVM classification outcome, namely peak size and skewness amplitude modulation, and then tested on 15 recordings. The GUI based multiclass SVM obtained a satisfying performance of 67% correct classification of the test data set. © 2019, International Islamic University Malaysia-IIUM.

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