A. R. Jayan, P. C. Pandey, "Automated modification of consonant-vowel ratio of stops for improving speech intelligibility", Int. J. Speech Technol., 2014, published online, DOI 10.1007/s10772-014-9254-4

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Abstract: Increasing the level of the consonant segments relative to the nearby vowel segments, known as consonant-vowel ratio (CVR) modification, is reported to be effective in improving speech intelligibility for listeners in noisy backgrounds and for hearing-impaired listeners. A technique for real-time CVR modification of stops using the rate of change of spectral centroid for detection of spectral transitions is presented. Its effectiveness in improving the recognition of consonants in the presence of speech-spectrum shaped noise is evaluated by conducting listening tests on normal-hearing subjects. At lower values of SNR, there was an increase of 7-21%in recognition scores and an equivalent SNR advantage of 3 dB. The technique is implemented on a DSP board based on a 16-bit fixed point processor with on-chip FFT hardware and tested for satisfactory real-time operation.

Keywords: CVR modification; Speech enhancement; Spectral transition