Title (en)

METHOD FOR DETERMINING THE BOUNDARIES OF A SIGNAL MIXED WITH BACKGROUND NOISE

Publication

EP 0161423 B1 19890118 (DE)

Application

EP 85103259 A 19850320

Priority

DE 3411485 A 19840328

Abstract (en)

[origin: EP0161423A1] 1. Method for determining the boundaries of signals mixed with background noise, particularly of signal boundaries for speech processing of words spoken against a background noise, the criterion used for distinguishing between a signal of interest and the background signal or background noise being their amplitude characteristics, characterized in that - in a first step, a signal or noise recorded and subsequently preprocessed, namely an input variable (E), is observed with respect to its mean amplitude (A) and its first transmission frequency (N), referred to a reference variable (R), and its range of fluctuation (dN) within a predetermined time interval, the transmission frequency (N) being averaged from individual transmission frequencies and the range of fluctuation being determined by the maximum deviation of the individual transmission frequencies, - auxiliary variables (S1, S2, N2) are derived from the relevant variables obtained, which auxiliary variables are defined as follows : S1 = a*A+c S2 = b*A+c N2 = N/d, the variables a, b, c, d being constants which are determined by empirical values or by the type of the signal of interest, - in a second step, the current transmission frequency (N1), referred to a reference variable (R), is determined within a time pattern needed for adequate resolution, - one of the previously derived auxiliary variables (S1 or S2) is allocated to a weighting variable (S) in dependence on the observed derived transmission frequency (N2) with its range of fluctuation (dN) and the current transmission frequency (N1), - the current input variable (E) is measured by means of this weighting variable (S), - an operating (O1) dependent on the position of the input variable (E) relative to the weighting variable (S) is performed, - two boundary values (UG, OG1) are determined on the basis of the type of the signal of interest, - the result of the operation (O1) is limited towards the bottom by the first limit value (UG), - the existence of a signal of interest is detected when the second upper limit value (OG1) is reached, - the precise beginning of the signal (SB) is in front of the relevant detection time (ZE1) by a defined time interval, - in a third step, the position of the input variable (E) relative to the weighting variable (S) is evaluated by a further operation (O2) in such a manner that the non-existence of the signal of interest detected in the second step is established using a second limid value (OG2) which has been previously determined on the basis of the type of the signal of interest, the further operation being defined as follows : O2 = 02+1 for ¦E¦ < S O2 = O in all other cases or OG2 in all other cases or O2 - 1 for ¦E¦ < S, - and the precise signal end (SE) is in front of the relevant detection time (ZE2) by a defined time interval.

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