

Title (en)

Method and apparatus for adaptively suppressing noise

Title (de)

Verfahren und Vorrichtung für adaptive Rauschunterdrückung

Title (fr)

Procédé et appareil de suppression adaptée du bruit

Publication

EP 1729287 A1 20061206 (EN)

Application

EP 06076642 A 20000107

Priority

- EP 00902355 A 20000107
- US 11524599 P 19990107

Abstract (en)

An apparatus and method for suppressing noise is presented. The apparatus may utilize a filter bank of bandpass filters to split the input noisy speech-containing signal into separate frequency bands. The overall average noise-to-signal ratio (NSR) of the input signal is estimated in the overall NSR estimator, which estimates the average noisy signal power in the input signal during speech activity and the average noise power during silence. Two indirect power measures are performed for each band, measuring a short-term power and a long-term power. The power estimation processes are adapted based on the signal activity indicated by the JVADAD. An NSR adapter adapts the NSR for each frequency band based on the long-term and short-term power measures, the overall NSR and the signal activity indicated by the JVADAD. The gain computer utilizes these NSR values to determine the gain factors for each frequency band.

IPC 8 full level

G10L 21/02 (2006.01); **G10L 21/0208** (2013.01); **G10L 21/0232** (2013.01); **G10L 25/18** (2013.01)

CPC (source: EP)

G10L 21/0208 (2013.01); **G10L 21/0232** (2013.01); **G10L 25/18** (2013.01)

Citation (applicant)

- US 4351983 A 19820928 - CROUSE WILLIAM G, et al
- US 4628529 A 19861209 - BORTH DAVID E [US], et al
- US 4630304 A 19861216 - BORTH DAVID E [US], et al
- US 4630305 A 19861216 - BORTH DAVID E [US], et al
- US 4454609 A 19840612 - KATES JAMES M [US]
- US 5012519 A 19910430 - ADLERSBERG SHABTAI [IL], et al
- R. J. MCAULAY; M. L. MALPASS: "Speech Enhancement Using a Soft-Decision Noise Suppression Filter", IEEE TRANS. ACOUST., SPEECH, SIGNAL PROCESSING, vol. ASSP-28, no. 2, April 1980 (1980-04-01), pages 137 - 145
- DTMF TONE GENERATION AND DETECTION: AN IMPLEMENTATION USING THE TMS320C54X, 1997, pages 5 - 12

Citation (search report)

- [DY] US 4630305 A 19861216 - BORTH DAVID E [US], et al
- [YA] WO 9624128 A1 19960808 - ERICSSON TELEFON AB L M [SE], et al
- [A] US 5706395 A 19980106 - ARSLAN LEVENT M [US], et al
- [XA] WO 8903141 A1 19890406 - MOTOROLA INC [US]
- [X] US 5632003 A 19970520 - DAVIDSON GRANT A [US], et al
- [A] EP 0856833 A2 19980805 - NEC CORP [JP]
- [DA] US 5012519 A 19910430 - ADLERSBERG SHABTAI [IL], et al
- [DA] US 4630304 A 19861216 - BORTH DAVID E [US], et al
- [A] GAGNON L ET AL: "SPEECH ENHANCEMENT USING RESONATOR FILTERBANKS", PROC. IEEE INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH & SIGNAL PROCESSING (ICASSP '91), 14 May 1991 (1991-05-14) - 17 May 1991 (1991-05-17), IEEE, NEW YORK, USA, pages 981 - 984, XP000222243, ISBN: 0-7803-0003-3

Cited by

CN110431625A; GB2465910A; GB2465910B; WO2009043066A1; US8515087B2; US8538043B2; WO2010013941A3; WO2010013939A3; US8275150B2; US8275154B2

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

EP 1729287 A1 20061206; EP 1748426 A2 20070131; EP 1748426 A3 20070221

DOCDB simple family (application)

EP 06076642 A 20000107; EP 06020682 A 20000107