

Title (en)

A method for estimating the clean spectrum of a signal

Title (de)

Verfahren zur Schätzung des rauschfreien Spektrums eines Signals

Title (fr)

Procédé d'estimation du spectre propre d'un signal

Publication

EP 2363853 A1 20110907 (EN)

Application

EP 10450036 A 20100304

Priority

EP 10450036 A 20100304

Abstract (en)

The invention proposes a method for estimating the clean spectrum of a signal degraded by additive noise, in particular a speech signal, by determining the coefficients of a predictive model of said clean spectrum, comprising: computing the spectrum of said signal; estimating the power spectrum of said noise; and determining said coefficients by minimizing the cost function $\|X - H \cdot S_v\|^2 + \lambda \|X\|^2$ with respect to said coefficients, with X being the spectrum of said signal, S_v being the power spectrum of said noise, and H being the transfer function of said model based on said coefficients.

IPC 8 full level

G10L 21/02 (2006.01); **G10L 21/0208** (2013.01); **G10L 25/12** (2013.01)

CPC (source: EP)

G10L 21/0208 (2013.01); **G10L 25/12** (2013.01)

Citation (applicant)

- WO 2008109904 A1 20080918 - OESTERREICHISCHE AKADEMIE DER [AT], et al
- Y. EPHRAIM; D. MALAH: "Speech enhancement using a minimum mean-square error short-time spectral amplitude estimator", IEEE TRANS. ACOUST., SPEECH, SIGNAL PROCESSING, vol. 32, no. 6, 1984, pages 1109 - 1121
- B. SIM; Y. TONG; J. CHANG; C. TAN: "A parametric formulation of the generalized spectral subtraction method", IEEE TRANSACTIONS ON SPEECH AND AUDIO PROCESSING, vol. 6, no. 4, July 1998 (1998-07-01), pages 328 - 337
- P. J. WOLFE; S. J. GODSILL: "Efficient alternatives to the Ephraim and Malah suppression rule for audio signal enhancement", EURASIP J. APPLIED SIGNAL PROCESSING, vol. 2003, no. 10, 2003, pages 1043 - 1051
- P. C. LOIZOU: "Speech enhancement: Theory and practice", 2007, CRC PRESS
- J. H. L. HANSEN; M. A. CLEMENTS: "Constrained iterative speech enhancement with application to speech, recognition", IEEE TRANS. SIGNAL PROCESSING, vol. 39, no. 4, April 1991 (1991-04-01), pages 795 - 805
- E. ZAVAREHEI; S. VASEGHI; Q. YAN: "Speech enhancement using Kalman filters for restoration of short-time DFT trajectories", IEEE WORKSHOP AUTOMATIC SPEECH RECOGNITION AND UNDERSTANDING, 2005, pages 313 - 318
- T. V. SREENIVAS; P. KIRNAPURE: "Codebook constrained Wiener filtering for speech enhancement", IEEE TRANS. SPEECH, AUDIO PROCESSING, vol. 4, no. 5, September 1996 (1996-09-01), pages 383 - 389

Citation (search report)

- [AD] EP 1970893 A1 20080917 - OESTERREICHISCHE AKADEMIE DER [AT], et al
- [A] WO 2008031124 A1 20080320 - UNIV GRAZ TECH [AT], et al
- [A] K. FUNAKI: "Speech enhancement based on iterative Wiener filter using complex speech analysis", PROC. EUSIPCO 2008, 29 August 2008 (2008-08-29), Lausanne, Switzerland, pages 1 - 5, XP002593133, Retrieved from the Internet <URL:http://www.eurasip.org/Proceedings/Eusipco/Eusipco2008/papers/1569105040.pdf> [retrieved on 20100722]

Cited by

CN112562701A; US2022358904A1; US12020682B2; US9875748B2; WO2013061232A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)

AL BA ME RS

DOCDB simple family (publication)

EP 2363853 A1 20110907

DOCDB simple family (application)

EP 10450036 A 20100304