

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

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Application

EP 10450036 A 20100304

Priority

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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. ZAREHEI; 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

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Designated extension state (EPC)

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