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### (54) Vector quantization system and method of operation

(57) A method of providing robust quantization of speech spectral parameters tolerant to spectral balance and speaker variations, the method including the steps of, for each of a plurality of line spectral frequencies (LSFs) of a speech spectrum, quantizing (14) the displace-

ment (12) of the LSF from an estimate (42) of its long-term mean, reconstructing (22,34) an estimate of the LSF from the quantized displacement and the long-term LSF mean estimate, and filtering (26,30,32) the reconstructed LSF estimate, thereby providing a subsequent long-term LSF mean estimate.

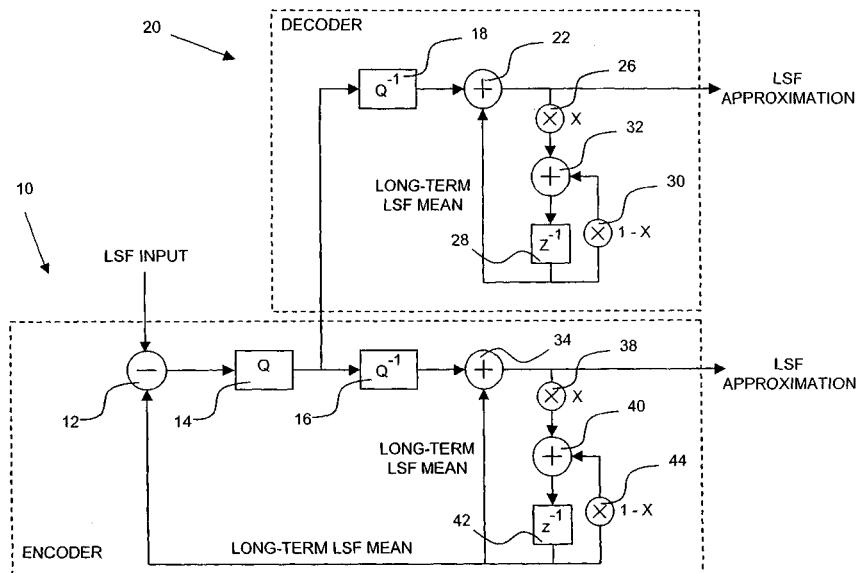


Fig. 1



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## EUROPEAN SEARCH REPORT

Application Number  
EP 01 11 6530

DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages		
X	US 5 966 688 A (SWAMINATHAN KUMAR ET AL) 12 October 1999 (1999-10-12) * figure 2 * * column 7, line 7 - line 24 * * column 8, line 35 - line 63 * ---	1,4,8,11	G10L19/06
A	OHMURA H ET AL: "VECTOR QUANTIZATION OF LSP PARAMETERS USING MOVING AVERAGE INTERFRAME PREDICTION" ELECTRONICS & COMMUNICATIONS IN JAPAN, PART III - FUNDAMENTAL ELECTRONIC SCIENCE, SCRIPTA TECHNICA. NEW YORK, US, vol. 77, no. 10, PART 3, 1 October 1994 (1994-10-01), pages 12-25, XP000527379 ISSN: 1042-0967 * the whole document *	1,4,5,8, 11,14	
A	CHO INHWAN ET AL: "Predictive pyramid vector quantisation of LSF parameters" ELECTRONICS LETTERS, IEE STEVENAGE, GB, vol. 34, no. 8, 16 April 1998 (1998-04-16), pages 735-736, XP006009612 ISSN: 0013-5194 * the whole document *	1,4,5,8, 11,14	<p>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</p> <p>G10L</p>
A	SKOGLUND J ET AL: "PREDICTIVE VQ FOR NOISY CHANNEL SPECTRUM CODING: AR OR MA?" IEEE INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH, AND SIGNAL PROCESSING (ICASSP'97), MUNICH, GERMANY, vol. 2, 21 - 24 April 1997, pages 1351-1354, XP000822706 IEEE COMP. SOC. PRESS, USA ISBN: 0-8186-7920-4 * the whole document *	1,4,5,8, 11,14	
		-/-	
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	14 November 2003	Ramos Sánchez, U	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons  & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			



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## EUROPEAN SEARCH REPORT

Application Number  
EP 01 11 6530

DOCUMENTS CONSIDERED TO BE RELEVANT		
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The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
THE HAGUE	14 November 2003	Ramos Sánchez, U
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone          Y : particularly relevant if combined with another document of the same category          A : technological background          O : non-written disclosure          P : intermediate document</p> <p>T : theory or principle underlying the invention          E : earlier patent document, but published on, or after the filing date          D : document cited in the application          L : document cited for other reasons          .....          &amp; : member of the same patent family, corresponding document</p>		

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 01 11 6530

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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