

(51) International Patent Classification:
G10L 19/107 (2013.01)(21) International Application Number:
PCT/EP2013/066074(22) International Filing Date:
31 July 2013 (31.07.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/710,137 5 October 2012 (05.10.2012) US(71) Applicant: **FRAUNHOFER-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.** [DE/DE]; Hansastraße 27c, 80686 München (DE).(72) Inventors: **BÄCKSTRÖM, Tom**; Bauerngasse 8-12, 90443 Nürnberg (DE). **MULTRUS, Markus**; Etzlaubweg 7, 90469 Nürnberg (DE). **FUCHS, Guillaume**; Fürther Straße 17, 91058 Erlangen (DE). **HELMRICH, Christian**; Hauptstraße 68, 91054 Erlangen (DE). **DIETZ, Martin**; Deutschherrnstraße 37, 90429 Nürnberg (DE).(74) Agents: **ZINKLER, Franz** et al.; 246, 82043 Pullach (DE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: AN APPARATUS FOR ENCODING A SPEECH SIGNAL EMPLOYING ACELP IN THE AUTOCORRELATION DOMAIN

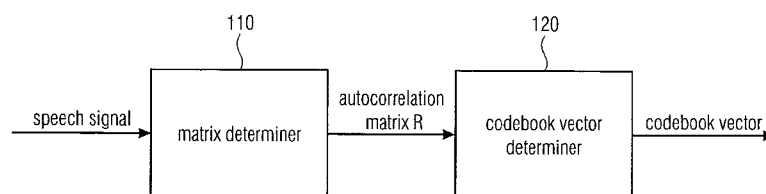


FIG 1

(57) Abstract: An apparatus for encoding a speech signal by determining a codebook vector of a speech coding algorithm is provided. The apparatus comprises a matrix determiner (110) for determining an autocorrelation matrix R , and a codebook vector determiner (120) for determining the codebook vector depending on the autocorrelation matrix R . The matrix determiner (110) is configured to determine the autocorrelation matrix R by determining vector coefficients of a vector r , wherein the autocorrelation matrix R comprises a plurality of rows and a plurality of columns, wherein the vector r indicates one of the columns or one of the rows of the autocorrelation matrix R , wherein $R(i, j) = r(li - jI)$, wherein $R(i, j)$ indicates the coefficients of the autocorrelation matrix R , and wherein j is a second index indicating one of the plurality of columns of the autocorrelation matrix R .

