

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
15 June 2023 (15.06.2023)



(10) International Publication Number
WO 2023/107007 A3

(51) International Patent Classification:

H03M 7/30 (2006.01) *G06N 3/02* (2006.01)
H03M 7/26 (2006.01)

(21) International Application Number:

PCT/SG2022/050887

(22) International Filing Date:

06 December 2022 (06.12.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

10202113561S 06 December 2021 (06.12.2021) SG

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(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

(54) Title: DECODERS FOR DECODING A CODEWORD OF A TUNSTALL CODE

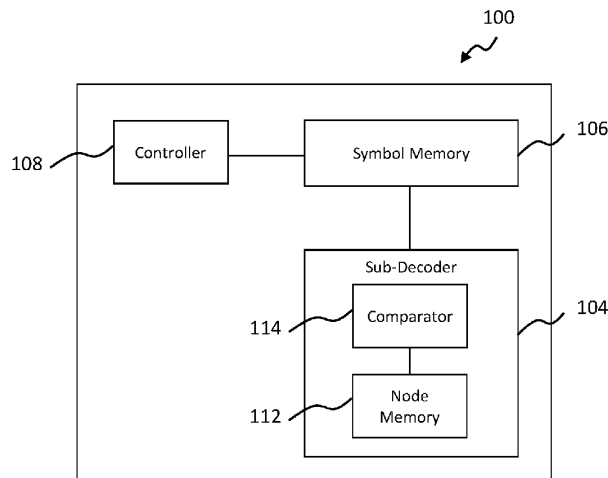


FIG. 1

(57) **Abstract:** A decoder for decoding a codeword of a Tunstall code is provided, including: a sub-decoder configured to receive an input codeword of the Tunstall code to the decoder and output a decoded symbol of the input codeword; a symbol memory configured to receive and store the decoded symbol of the input codeword from the sub-decoder; and a controller configured to control the symbol memory to output one or more decoded symbols stored in the symbol memory. The sub-decoder includes: a node memory configured to store, for a plurality of nodes of a Tunstall tree of the Tunstall code corresponding to a first level of the Tunstall tree, a plurality of codewords of the Tunstall code assigned to the plurality of nodes, respectively; and a comparator configured to compare the input codeword with the plurality of codewords assigned to the plurality of nodes corresponding to the first level of the Tunstall tree received from the node memory and produce the decoded symbol of the input codeword with respect to the first level of the Tunstall tree based on the comparison. Another decoder for decoding a codeword of a Tunstall code is also provided, including: a symbol memory

[Continued on next page]

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, 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, ME, 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))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

20 July 2023 (20.07.2023)

comprising a plurality of memory entries, each memory entry having stored therein one or more decoded symbols of a codeword of the Tunstall code corresponding to the memory entry; and a controller configured to receive an input codeword of the Tunstall code to the decoder and control the symbol memory to output the one or more decoded symbols stored in one of the plurality of memory entries corresponding to the input codeword.