



- (51) **International Patent Classification:**
G06T 17/10 (2006.01) *G06T 15/00* (2011.01)
- (21) **International Application Number:**
PCT/US2020/013348
- (22) **International Filing Date:**
13 January 2020 (13.01.2020)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
62/792,259 14 January 2019 (14.01.2019) US
- (71) **Applicant: FUTUREWEI TECHNOLOGIES, INC.**
[US/US]; 5700 Tennyson Parkway, Suite 600, Plano, Texas 75024 (US).
- (72) **Inventors: ZAKHARCHENKO, Vladyslav;** 457 E. Evelyn Avenue, Apt. 147, Sunnyvale, California 94086 (US). **CHEN, Jianle;** 10756 Corte De Tiburon, San Diego, California 92130 (US). **ZHANG, Dejun;** Huawei Building No. 3 Xinxu Road, Shangdi Information Industry Base, Haidian District, Beijing (CN). **KANGYING, Cai;** Huawei Building No. 3 Xinxu Road, Shangdi Information Industry Base, Haidian District, Beijing (CN).

(74) **Agent: DIETRICH, William H.;** CONLEY ROSE, P.C., 5601 Granite Parkway, Suite 500, Plano, Texas 75024 (US).

(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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, 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, 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, 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, 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).

(54) **Title:** EFFICIENT PATCH ROTATION IN POINT CLOUD CODING

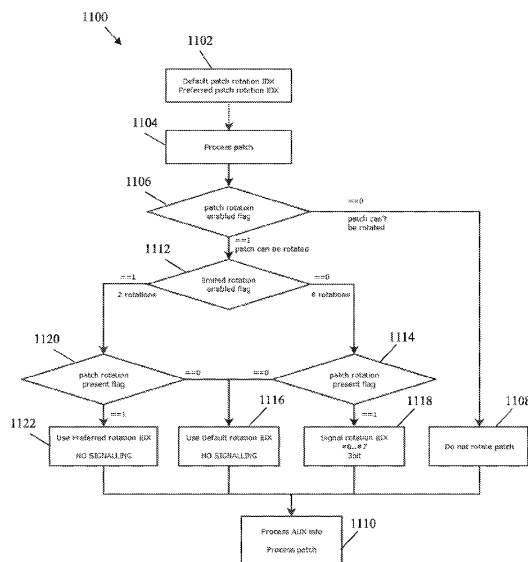


FIG. 11

(57) **Abstract:** A method of point cloud coding (PCC) implemented by a decoder is provided. The method includes receiving, by a receiver of the decoder, a bitstream containing a patch rotation enabled flag and atlas information for a two dimensional (2D) patch; determining, by a processor of the decoder, that the 2D patch is capable of being rotated based on the patch rotation enabled flag; rotating, by the processor, the 2D patch; and reconstructing, by the processor, a three dimensional (3D) image using the atlas information and the 2D patch as rotated.

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*