

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
10 June 2021 (10.06.2021)



(10) International Publication Number
WO 2021/112953 A1

(51) International Patent Classification:
G06T 9/00 (2006.01)

(21) International Application Number:
PCT/US2020/054600

(22) International Filing Date:
07 October 2020 (07.10.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/942,549 02 December 2019 (02.12.2019) US
17/063,411 05 October 2020 (05.10.2020) US

(71) Applicant: **TENCENT AMERICA LLC** [US/US]; 2747
Park Boulevard, Palo Alto, California 94306 (US).

(72) Inventors: **ZHANG, Xiang**; c/o TENCENT AMERICA
LLC, 2747 Park Boulevard, Palo Alto, California 94306
(US). **GAO, Wen**; c/o TENCENT AMERICA LLC, 2747
Park Boulevard, Palo Alto, California 94306 (US). **LIU,
Shan**; c/o TENCENT AMERICA LLC, 2747 Park Boule-
vard, Palo Alto, California 94306 (US).

(74) Agent: **MA, Johnny** et al.; Oblon, McClelland, Maier &
Neustadt, L.L.P., 1940 Duke Street, Alexandria, Virginia
22314 (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, IT, 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,

(54) Title: METHOD AND APPARATUS FOR POINT CLOUD CODING

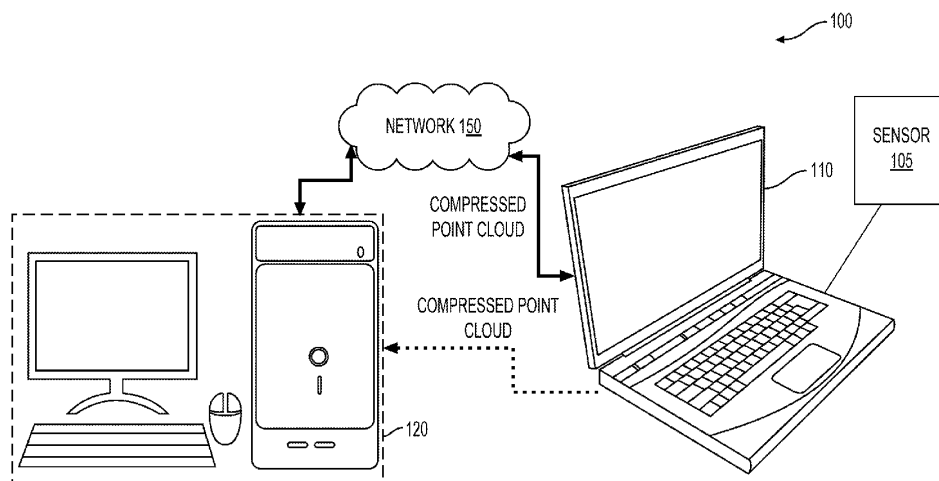


FIG. 1

(57) **Abstract:** An apparatus for point cloud decoding includes processing circuitry. The processing circuitry receives, from a coded bitstream for a point cloud, encoded occupancy codes for nodes in an octree structure for the point cloud. The nodes in the octree structure correspond to three dimensional (3D) partitions of a space of the point cloud. Sizes of the nodes are associated with sizes of the corresponding 3D partitions. Further, the processing circuitry decodes, from the encoded occupancy codes, occupancy codes for the nodes. At least a first occupancy code for a child node of a first node is decoded without waiting for a decoding of a second occupancy code for a second node having a same node size as the first node. Then, the processing circuitry reconstructs the octree structure based on the decoded occupancy codes for the nodes, and reconstructs the point cloud based on the octree structure.

[Continued on next page]

WO 2021/112953 A1

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).

Published:

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