

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
18 January 2024 (18.01.2024)



(10) International Publication Number
WO 2024/012748 A1

(51) International Patent Classification:

H04N 19/107 (2014.01) H04N 19/70 (2014.01)
H04N 19/117 (2014.01) H04N 19/82 (2014.01)

10165 Lone Dove Street, San Diego, California 92127 (US).
PANUSOPONE, Krit; 10725 Calle Mar De Mariposa, San
Diego, California 92130 (US).

(21) International Application Number:

PCT/EP2023/063275

(74) Agent: **NOKIA EPO REPRESENTATIVES**; Nokia
Technologies Oy, Karakaari 7, 02610 Espoo (FI).

(22) International Filing Date:

17 May 2023 (17.05.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/388,385 12 July 2022 (12.07.2022) US

(71) Applicant: **NOKIA TECHNOLOGIES OY** [FI/FI];
Karakaari 7, 02610 Espoo (FI).

(72) Inventors: **WANG, Limin**; 6338 Sagebrush Bend Way,
San Diego, California 92130 (US). **HONG, Seungwook**;

(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, 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, MU, 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.

(54) Title: ASYMMETRIC IN-LOOP FILTERS AT VIRTUAL BOUNDARIES

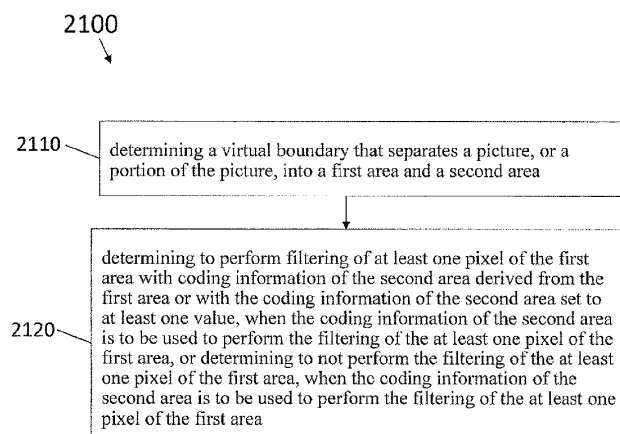


FIG. 21

(57) Abstract: In accordance with example embodiments of the invention there is at least a method and an apparatus to perform : determining a virtual boundary that separates a picture, or a portion of the picture, into a first area and a second area; and determining to perform filtering of at least one pixel of the first area with coding information of the second area derived from the first area or with the coding information of the second area set to at least one value, when the coding information of the second area is to be used to perform the filtering of the at least one pixel of the first area, or determine to not perform the filtering of the at least one pixel of the first area, when the coding information of the second area is to be used to perform the filtering of the at least one pixel of the first area.

[Continued on next page]

(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, SC, 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))