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(71) Applicant: **BANUBA LIMITED** [—/CN]; Heng Shan Center, 145 Queen's Road East, Office A, 16/F, Wan Chai, Hong Kong (CN).

(72) Inventors: **PROKOPENYA, Viktor**; London (GB). **HUSHCHYN, Yury**; Vilnius (BY). **LEMEZA, Alexander**; Minsk (BY).

(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, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(54) Title: COMPUTER-IMPLEMENTED METHODS AND COMPUTER SYSTEMS CONFIGURED FOR GENERATING PHOTOREALISTIC-IMITATING SYNTHETIC REPRESENTATIONS OF SUBJECTS

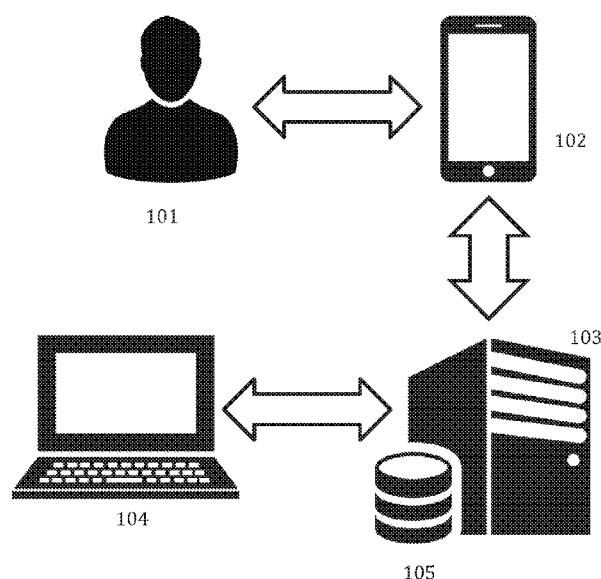


FIG. 1

(57) Abstract: An exemplary inventive computer-implemented method may include steps, performed by a processor, of: obtaining training real representations of a real subject; obtaining a training synthetic representation having a visual effect applied to a synthetic subject; training a first neural network and a second neural network by: presenting the first neural network with training real representation and candidate meta-parameters of latent variables for the visual effect to generate a training photorealistic-imitating synthetic representation (308) of the real subject with the visual effect; presenting the second neural network with the training photorealistic-imitating synthetic representation (308) and the training synthetic representation (302) to determine actual meta-parameters of the latent variables of the visual effect, where the actual meta-parameters are meta-parameters at which the second neural network has identified

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).

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that the training photorealistic-imitating synthetic representation (308) is realistic, and presenting to the first neural network another real representation and the actual meta-parameters of the latent variables of the visual effect to incorporate the visual effect into another real subject.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2018/000863

A. CLASSIFICATION OF SUBJECT MATTER

H04N 5/262(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, CNPAT, CNKI, IEEE: neural network, meta, parameter, visual effect, face, replace, deform, swap, transform, adjust, determine

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004236708 A1 (CRANIAL TECHNOLOGIES, INC.) 25 November 2004 (2004-11-25) description, paragraphs[0019]-[0025], [0059], [0081]-[0134] and Fig.15-19	1-20
A	US 2013266181 A1 (OBJECTVIDEO, INC.) 10 October 2013 (2013-10-10) the whole document	1-20
A	US 2011012912 A1 (NAKAMURA SENSABURO ET AL.) 20 January 2011 (2011-01-20) the whole document	1-20
A	CN 106096535 A (SYSU-CMU SHUNDE INT JOINT RES INST) 09 November 2016 (2016-11-09) the whole document	1-20

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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“&” document member of the same patent family

Date of the actual completion of the international search

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National Intellectual Property Administration, PRC
6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing
100088
China

Authorized officer

ZHU,Dianyao

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
US	2004236708	A1	25 November 2004	None			
US	2013266181	A1	10 October 2013	US	2016034751	A1	04 February 2016
US	2011012912	A1	20 January 2011	JP	2011023902	A	03 February 2011
				CN	101958002	A	26 January 2011
CN	106096535	A	09 November 2016	None			