

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
22 September 2022 (22.09.2022)



(10) International Publication Number
WO 2022/197430 A1

(51) International Patent Classification:

G06T 13/40 (2011.01) *G06T 17/20* (2006.01)
G06N 3/02 (2006.01) *G06V 40/16* (2022.01)
G06T 17/00 (2006.01) *H04N 7/15* (2006.01)

Hi-Tech Park, Nanshan District, Shenzhen 518057 (CN).
WANG, Bo; 35/F, Tencent Building, Kejzhongyi Road,
Midwest District of Hi-Tech Park, Nanshan District, Shen-
zhen 518057 (CN).

(21) International Application Number:

PCT/US2022/018213

(74) Agent: **SUN, Yalei** et al.; Morgan Lewis & Bockius LLP,
1400 Page Mill Road, Palo Alto, CA 94304 (US).

(22) International Filing Date:

28 February 2022 (28.02.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

17/202,121 15 March 2021 (15.03.2021) US

(63) Related by continuation (CON) or continuation-in-part
(CIP) to earlier application:

US 17/202,121 (CON)
Filed on 15 March 2021 (15.03.2021)

(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, JM, 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.

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

(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,

(72) Inventors: **YANG, Bo**; 35/F, Tencent Building, Ke-
jzhongyi Road, Midwest District of Hi-Tech Park, Nan-
shan District, Shenzhen 518057 (CN). **LIU, Songrun**; 35/
F, Tencent Building, Kejzhongyi Road, Midwest District of

(54) Title: METHODS AND SYSTEMS FOR FORMING PERSONALIZED 3D HEAD AND FACIAL MODELS

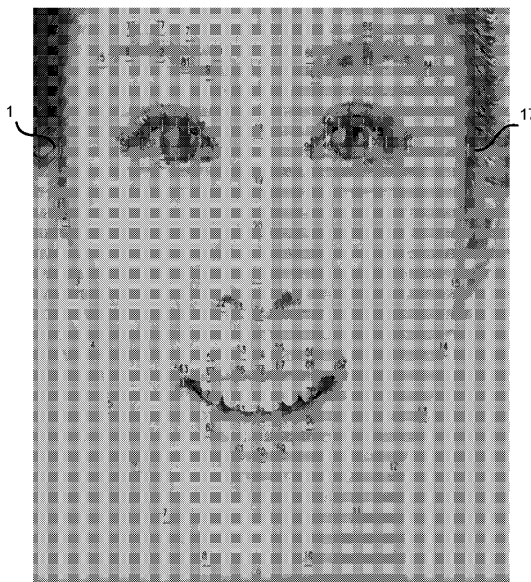


FIG. 1

(57) Abstract: An electronic apparatus performs a method of customizing a standard face of an avatar using a two-dimensional (2D) facial image of a subject (e.g., a real-life person), the method including: identifying a set of subject keypoints in the 2D facial image; transforming the set of subject keypoints into a set of avatar keypoints associated with the avatar; generating a set of face control parameters for the standard face by applying a keypoint-to-parameter (K2P) neural network model to the set of avatar keypoints, the set of face control parameters each relating to one of a plurality of facial features of the standard face; and adjusting the plurality of facial features of the standard face by applying the set of face control parameters to the standard face, wherein the adjusted standard face of the avatar has the facial features of the 2D facial image of the subject.

WO 2022/197430 A1

[Continued on next page]

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))*