



- (51) International Patent Classification:
G06F 17/00 (2006.01) *G06T 5/00* (2006.01)
- (21) International Application Number:
PCT/US2012/023879
- (22) International Filing Date:
3 February 2012 (03.02.2012)
- (25) Filing Language:
English
- (26) Publication Language:
English
- (30) Priority Data:
61/439,298 3 February 2011 (03.02.2011) US
- (71) Applicant (for all designated States except US): **VOXEL-ERON LLC** [US/US]; 2751 Lotus Street, Pleasanton, CA 94588 (US).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): **OAKLEY, Jonathan** [GB/US]; 2751 Lotus Street, Pleasanton, CA 94588 (US). **RUSSAKOFF, Daniel** [US/US]; 2751 Lotus Street, Pleasanton, CA 94588 (US).
- (74) Agent: **GENCARELLA, Michael, L.**; Womble Carlyle Sandridge & Rice, LLP, Attn: IP Docketing, P.O. Box 7037, Atlanta, GA 30357-0037 (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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR IMAGE ANALYSIS AND INTERPRETATION

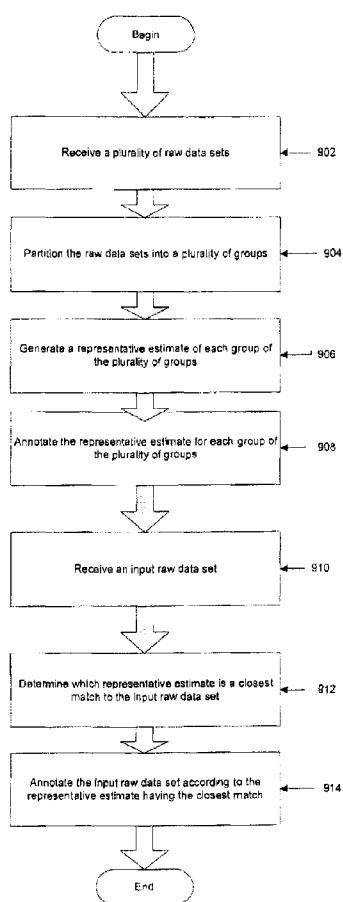


Fig. 9

(57) Abstract: A method is provided that includes identifying a plurality of data sets, each data set is associated with a distribution model and each data set is associated with an image having a first noise level. The method includes partitioning the data sets into a plurality of groups and generating a best representative estimate for each group, the estimate is associated with a second noise level that is less than the first noise level. The method further includes annotating each group and receiving an input data set. The method includes assigning the input data set to a group and annotating the input data set according to that group's annotation.



MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(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, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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,

(88) Date of publication of the international search report:

18 October 2012

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/023879**A. CLASSIFICATION OF SUBJECT MATTER****G06F 17/00(2006.01)i, G06T 5/00(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)

G06F 17/00; G06K 9/74; G06K 9/62; G06K 9/40

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords:image resolution, groups, partitioning, closest match, annotation, super-resolution

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003-0133615 A1 (MARSHALL W. BERN et al.) 17 July 2003. See paragraph 52 - paragraph 53; paragraph 64 - paragraph 66; claims 1-2, and figures 2, 7.	1-23
A	C.Y.Yang, et al. Exploiting self-similarities for single frame super-resolution. in: the 10th Asian Conference on Computer Vision, 08 November 2010. See pages 3 - page 7; figure 1.	1-23
A	GLASNER, DANIEL et al. Super-Resolution from a Single Image. in: the 12th IEEE International Conference on Computer Vision. 2009. 29 September 2009. See page 351 - page 354; figures 3-4.	1-23
A	US 2010-0092075 A1 (LEE SHIH-JONG J. et al.) 15 April 2010. See paragraph 34 - paragraph 92; claim 1, and figures 4-7.	1-23

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

20 AUGUST 2012 (20.08.2012)

Date of mailing of the international search report

22 AUGUST 2012 (22.08.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

PARK, SANG HYUN

Telephone No. 82-42-481-8263



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/023879

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003-0133615 A1	17.07.2003	US 7024049 B2	04.04.2006
US 2010-0092075 A1	15.04.2010	US 2007-0127834 A1	07.06.2007
		US 7974464 B2	05.07.2011
		US 8014590 B2	06.09.2011