

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
14 August 2008 (14.08.2008)

PCT

(10) International Publication Number  
**WO 2008/097552 A3**

- (51) International Patent Classification:  
*G06T 7/00* (2006.01)
- (21) International Application Number:  
PCT/US2008/001523
- (22) International Filing Date: 5 February 2008 (05.02.2008)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/888,147 5 February 2007 (05.02.2007) US
- (71) Applicants (for all designated States except US):  
**SIEMENS MEDICAL SOLUTIONS USA, INC.**  
[US/US]; 51 Valley Stream Parkway, Malvern, PA 19355-1406 (US). **AZAR, Fred, S.** [CA/US]; 121 Commonwealth Court #7, Princeton, NJ 08540 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **GRADY, Leo**  
[US/US]; 5 Knoll Drive, Yardley, PA 19067 (US).
- (74) Agents: **PASCHBURG, Donald, B.** et al.; Siemens Corporation- Intellectual Property Dept., 170 Wood Avenue South, Iselin, NJ 08830 (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, 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, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR CELL ANALYSIS IN MICROSCOPY

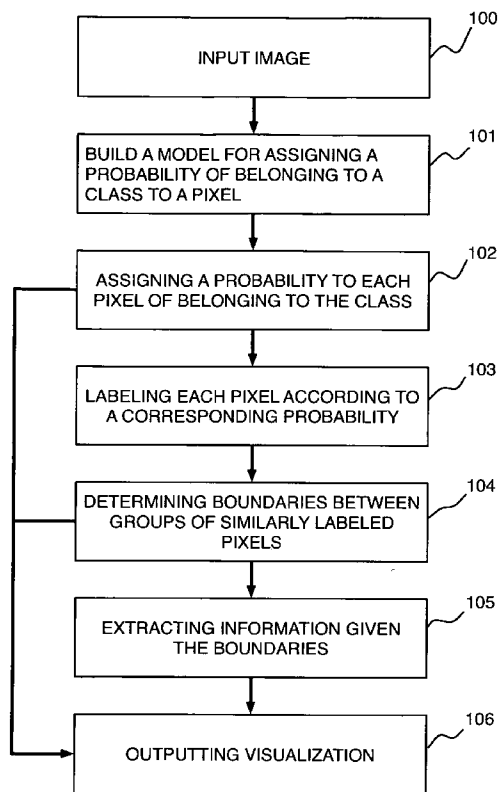


FIG. 1

(57) Abstract: A computer implemented method for differentiating between elements of an image and a background includes inputting an image comprising pixels forming a view of the elements and a background (100), providing a model for assigning a probability of belonging to a predefined class to each of the pixels (101), assigning a probability to each of the pixels of belonging to the predefined class (102), labeling each of the pixels according to a corresponding probability and a predefined threshold (103), determining boundaries between groups of like-labeled pixels (104), and outputting a visualization of the boundaries (106).

WO 2008/097552 A3



NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG,  
CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments*

**Published:**

— *with international search report*

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

2 April 2009

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2008/001523

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. G06T7/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) G06T		
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 practical, search terms used) EPO-Internal, WPI Data		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LEO GRADY ET AL: "Random Walks for Interactive Organ Segmentation in Two and Three Dimensions: Implementation and Validation" MEDICAL IMAGE COMPUTING AND COMPUTER-ASSISTED INTERVENTION - MIC CAI 2005 LECTURE NOTES IN COMPUTER SCIENCE;;LNCS, SPRINGER, BERLIN, DE, vol. 3750, 1 January 2005 (2005-01-01), pages 773-780, XP019021832 ISBN: 978-3-540-29326-2 page 774, last paragraph figure 3  ----- -/--	1-14
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> 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 document 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 another 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  9 February 2009		Date of mailing of the international search report  16/02/2009
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer  dos Santos, Luís

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2008/001523

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>GRADY L ED - GANG PAN ET AL: "Multilabel Random Walker Image Segmentation Using Prior Models" COMPUTER VISION AND PATTERN RECOGNITION, 2005 IEEE COMPUTER SOCIETY CONFERENCE ON, IEEE, PISCATAWAY, NJ, USA, vol. 1, 20 June 2005 (2005-06-20), pages 763-770, XP010817350 ISBN: 978-0-7695-2372-9 sections 2.1, 3 figures 1,3</p> <p style="text-align: center;">-----</p>	1,8
A	<p>RABINOVICH A ET AL: "Model Order Selection and Cue Combination for Image Segmentation" COMPUTER VISION AND PATTERN RECOGNITION, 2006 IEEE COMPUTER SOCIETY CO NFERENCE ON NEW YORK, NY, USA 17-22 JUNE 2006, PISCATAWAY, NJ, USA, IEEE, vol. 1, 17 June 2006 (2006-06-17), pages 1130-1137, XP010923082 ISBN: 978-0-7695-2597-6 abstract</p> <p style="text-align: center;">-----</p>	1-14