

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
24 August 2006 (24.08.2006)

PCT

(10) International Publication Number  
**WO 2006/088983 A3**

(51) International Patent Classification:  
**G06F 19/00** (2006.01)

(21) International Application Number:  
PCT/US2006/005388

(22) International Filing Date:  
16 February 2006 (16.02.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/653,290 16 February 2005 (16.02.2005) US  
11/355,299 15 February 2006 (15.02.2006) US

(71) Applicant (for all designated States except US):  
**SIEMENS MEDICAL SOLUTIONS USA, INC.**  
[US/US]; 51 Valley Stream Parkway, Malvern, Pennsylvania 19355 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KRISHNAN, Sri-ram** [US/US]; 6 Avondale Circle, Exton, Pennsylvania

19341 (US). **RAO, R. Bharat** [IN/US]; 2060 St. Andrews Drive, Berwyn, Pennsylvania 19312 (US).

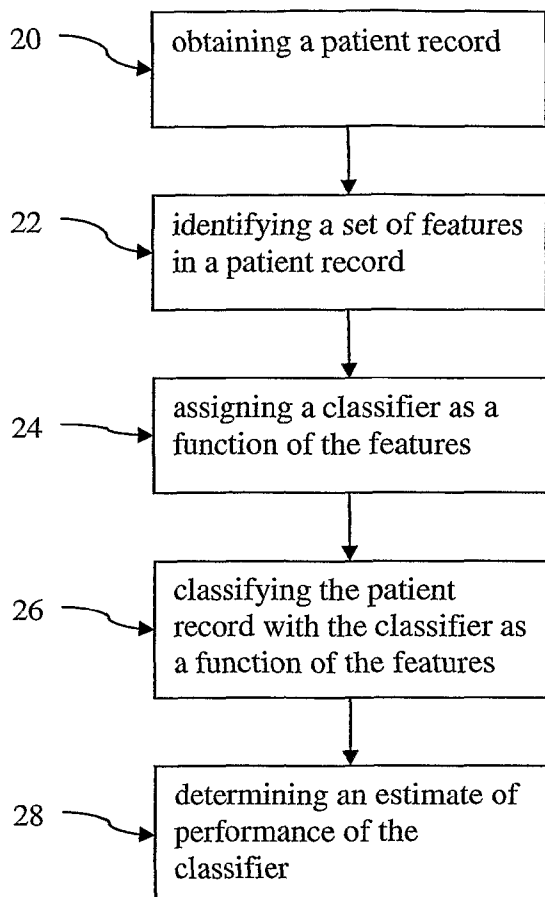
(74) Agents: **JOHNSON, Brian K.** et al.; Siemens Corporation, Intellectual Property Dept., 170 Wood Avenue South, Iselin, New Jersey 08830 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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,

[Continued on next page]

(54) Title: MISSING DATA APPROACHES IN MEDICAL DECISION SUPPORT SYSTEMS



(57) Abstract: Missing data is addressed in a medical decision support system. The classifier applied to the patient record with missing data is obtained as a function of the available data. For example, one of a plurality of different classifiers is selected based on the features available in the patient record to be classified. The different classifiers are developed using different feature sets. The classifier developed using a feature set closest to or a sub-set of the features available in the patient record is selected for classifying the patient record. As another example, features in a training set corresponding to features available in the patient record are used to build a classifier. The classifier is applied to the patient record by inputting the available features of the patient record.

WO 2006/088983 A3



FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,  
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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

1 March 2007

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/005388

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. G06F19/00

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

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)

EP0-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|-----------|--|-----------------------|
| X         | US 2003/105731 A1 (LAPOINTE JEROME [US] ET AL) 5 June 2003 (2003-06-05)<br>paragraph [0019] - paragraph [0039]<br>paragraph [0051] - paragraph [0457]<br>figures 1,2,3b,4,6<br>----- | 1-21                  |

☐ 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 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

14 December 2006

Date of mailing of the international search report

27/12/2006

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Rinelli, Pietro

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/005388

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
| US 2003105731                             | A1                  | 05-06-2003                 | NONE                |