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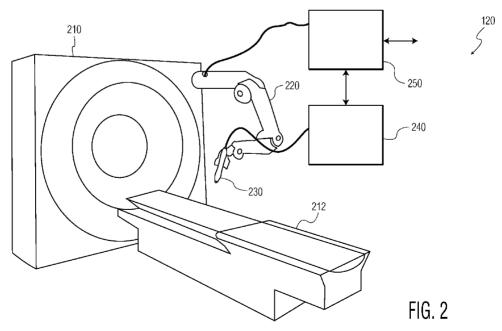
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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[Continued on next page]

#### (54) Title: HAPTIC FEEDBACK MEDICAL SCANNING METHODS AND SYSTEMS



(57) Abstract: Devices for use in medical imaging can include a robotic arm (220) having multiple degrees-of-freedom movement capability, a scanning transducer (230) coupled in proximity to an end of the robotic arm, and a haptic interface (250) having one or more mechanical linkages and being in communication with the robotic arm, and adapted to issue command signals to move the robotic arm in one or more directions or angles and to receive feedback signals from the robotic arm.



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### INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. A61B8/00 A61B19/00

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

#### B. FIELDS SEARCHED

 $\begin{tabular}{ll} Minimum documentation searched (classification system followed by classification symbols) \\ A 6 1 R \end{tabular}$ 

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

Ero-III	ternal, wri bata		
C. DOCUM	ENTS CONSIDERED TO BE RELEVANT	· · · · · · · · · · · · · · · · · · ·	·
Category*	Citation of document, with indication, where appropriate, of the	he relevant passages	Relevant to claim No.
X	US 6 425 865 B1 (SALCUDEAN SEP ET AL) 30 July 2002 (2002-07-3		1-13, 15-18,20
Y	column 6, line 36 - column 9,	1ine 42	14,19
Υ	US 2004/116906 A1 (LIPOW KENNE 17 June 2004 (2004-06-17) paragraphs [0047] - [0050]	TH [US])	14,19
Y	US 2005/261591 A1 (BOCTOR EMAD 24 November 2005 (2005-11-24) paragraphs [0031], [0032] paragraphs [0035], [0036]	(US] ET AL)	1–20
Y	US 6 436 107 B1 (WANG YULUN [L 20 August 2002 (2002-08-20) column 8, line 37 - column 9, column 10, line 20 - line 46		1-20
X Furt	her documents are listed in the continuation of Box C.	See patent family annex.	
"A" docume consid "E" earlier filing of "L" docume which citatio "O" docume other "P" docume	ent defining the general state of the art which is not dered to be of particular relevance document but published on or after the international date ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another or or other special reason (as specified) enterferring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but han the priority date claimed	<ul> <li>"T" later document published after the inte or priority date and not in conflict with cited to understand the principle or th invention</li> <li>"X" document of particular relevance; the cannot be considered novel or cannot involve an inventive step when the document of particular relevance; the cannot be considered to involve an indocument is combined with one or ments, such combination being obvio in the art.</li> <li>"&amp;" document member of the same patent</li> </ul>	the application but every underlying the claimed invention to be considered to occurrent is taken alone claimed invention ventive step when the one other such docuurs to a person skilled
Date of the	actual completion of the international search	Date of mailing of the international sea	arch report
8	3 April 2009	22/04/2009	
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  Trachterna, Morte	·n

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C(Continu	ation). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006/074287 A1 (NEUMANN DAVID C [US] ET AL) 6 April 2006 (2006-04-06) paragraphs [0055] - [0057]	1-20

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2007/053773

Patent document cited in search report	.	Publication date	Patent family member(s)	Publication date
US 6425865	B1	30-07-2002	NONE	<u> </u>
US 2004116906	A1	17-06-2004	AU 2003300991 A1 CA 2550468 A1 EP 1617750 A2 WO 2004058049 A2	22-07-2004 15-07-2004 25-01-2006 15-07-2004
US 2005261591	A1	24-11-2005	NONE	
US 6436107	B1	20-08-2002	NONE	
US 2006074287	A1	06-04-2006	CN 1872001 A DE 102005046824 A1 FR 2875694 A1 JP 2006102494 A	06-12-2006 06-04-2006 31-03-2006 20-04-2006