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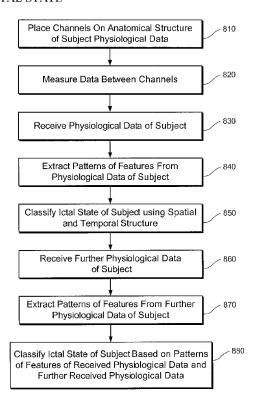
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(54) Title: METHOD, SYSTEM, AND COMPUTER-ACCESSIBLE MEDIUM FOR CLASSIFICATION OF AT LEAST ONE ICTAL STATE



(57) Abstract: An exemplary methodology, procedure, system, method and computer- accessible medium can be provided for receiving physiological data for the subject, extracting one or more patterns of features from the physiological data, and classifying the at least one state of the subject using a spatial structure and a temporal structure of the one or more patterns of features, wherein at least one of the at least one state is an ictal state.

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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, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), (88) Date of publication of the international search report: OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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#### A. CLASSIFICATION OF SUBJECT MATTER

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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)

IPC 8: A61N 1/00, A61N 1/36. A61K 31/425, G06F 17/00, G06F 17/60

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 since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal): "physiological and (ictus or spasm or paroxysm or seizure) and pattern and predict"

#### C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
X A	US 2007-0213786 A1 (JAMES C. SACKELLARES et al.) 2007.09.13. see abstract; paragraphs [0062]-[0073]; claims 1-2; figs. 1-2, 16.	1-6,11-13,33-34,36-37 	
X A	MARYANN D. ALESSANDRO et al., "Epileptic Seizure Prediction Using Hybrid Feature Selection Over Multiple Intracranial EEG Electrode Contacts: A Report of Four Patients (2003)", IEEE Transactions on Biomedical Engineering, Vol.50, No.5, May 2003, pp. 603-615. see abstract; pages 605-606; fig.2.	1,6-10,33,35  2-5,11-32,34,36-74	
A	US 2007-0150024 A1 (KENT W. LEYDE et al.) 2007.06.28. see abstract; paragraphs [0089]-[0100]; claims 1-2; figs. 6-7.	1-74	
A	KR 10-2002-0081770 A (POSTECH FOUNDATION) 2002.10.30. see abstract; figs. 3-5.	1-74	
A	KR 10-2005-0085778 A (GE MEDICAL SYSTEMS GLOBAL TECHNOLOGY COMPANY, LLC) 2005.08.29. see abstract; page 8 line 8-page 9 line 3; figs. 4-5.	1-74	

		Further documents are	listed in	n the co	ontinuation	of Box C	
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See patent family annex.

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Date of mailing of the international search report

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0213786 A1	13.09.2007	None	
US 2007-0150024 A1	28.06.2007	EP 1971394 A2 US 2007-0150025 A1 WO 2007-079181 A2 WO 2007-079181 A3	24.09.2008 28.06.2007 12.07.2007 12.07.2007
KR 10-2002-0081770 A	30.10.2002	None	
KR 10-2005-0085778 A	29.08.2005	AU 2003-295699 A1 EP 1576523 A2 JP 2006-511882 A US 2004-0122787 A1 WO 2004-061744 A2 WO 2004-061744 A3	29.07.2004 21.09.2005 06.04.2006 24.06.2004 22.07.2004 22.07.2004