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(54) Title: ADAPTIVE REAL-TIME SEIZURE PREDICTION SYSTEM AND METHOD

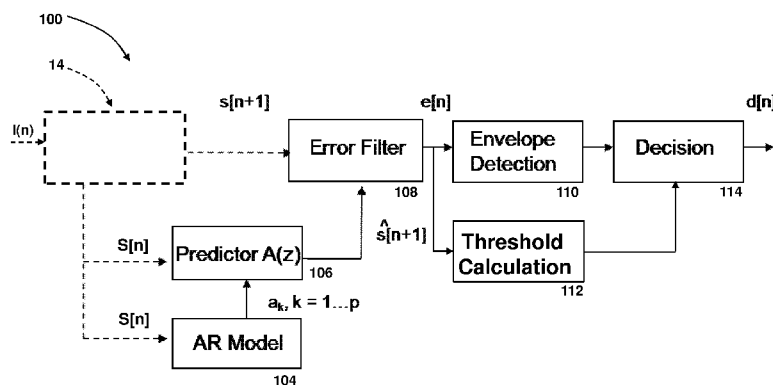


FIG. 2

(57) Abstract: A real-time seizure prediction system. The system includes an implantable electrode configured to transmit an analog neuro-electrophysiological signal from a subject, an analog-to-digital converter configured to convert the analog neuro-electrophysiological signal to a digital neuro-electrophysiological signal based on a predetermined sampling rate, a processor configured to perform following steps during a period defined by the predetermined sampling rate: calculate a plurality of autocorrelation coefficients of the digital neuro-electrophysiological signal for a first predetermined number of samples, calculate a predicted future value of the digital neuro-electrophysiological data based on the plurality of autocorrelation coefficients and the first predetermined number of samples of the digital neuro-electrophysiological data, compare the predicted future value with an actual future value of the digital neuro-electrophysiological data to determine a prediction error, calculate a threshold based on a mean squared value of the prediction error for the first predetermined number of samples and based on a proportionality constant, generate a seizure prediction signal if the prediction error remains above the threshold for a second predetermined number of samples, and a warning device configured to receive the seizure prediction signal and generate an alert.



WO 2010/141603 A3

A. CLASSIFICATION OF SUBJECT MATTER*A61B 5/0476(2006.01)i, A61B 5/0478(2006.01)i, A61B 5/0484(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)

A61B 5/0476; A61B 5/04; A61N 1/18

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: implantable, neuro-electrophysiological signal, autocorrelation

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003-0158587 A1 (ROSANA ESTELLER et al.) 21 August 2003 See abstract, paragraphs 60-88, and figures 1-4	1-15
A	US 2008-0194981 A1 (MIKA SARKELA et al.) 14 August 2008 See abstract, paragraphs 38-82, and figures 1,2,8a	1-15
A	US 5,311,876 A (DALE E. OLSEN et al.) 17 May 1994 See abstract, column 6 line 62 - column 7 line 7, and figures 1A,1B	1-15
A	US 2007-0067003 A1 (JUSTIN C. SANCHEZ et al.) 22 March 2007 See abstract, paragraphs 49-93, and figure 1	1-15

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

* Special categories of cited documents:

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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US 2007-0067003 A1	22.03.2007	None	