

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
18 April 2002 (18.04.2002)

PCT

(10) International Publication Number
WO 02/031764 A3

- (51) International Patent Classification⁷: G06N 3/04
- (21) International Application Number: PCT/EP01/11490
- (22) International Filing Date: 5 October 2001 (05.10.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
00122415.3 13 October 2000 (13.10.2000) EP
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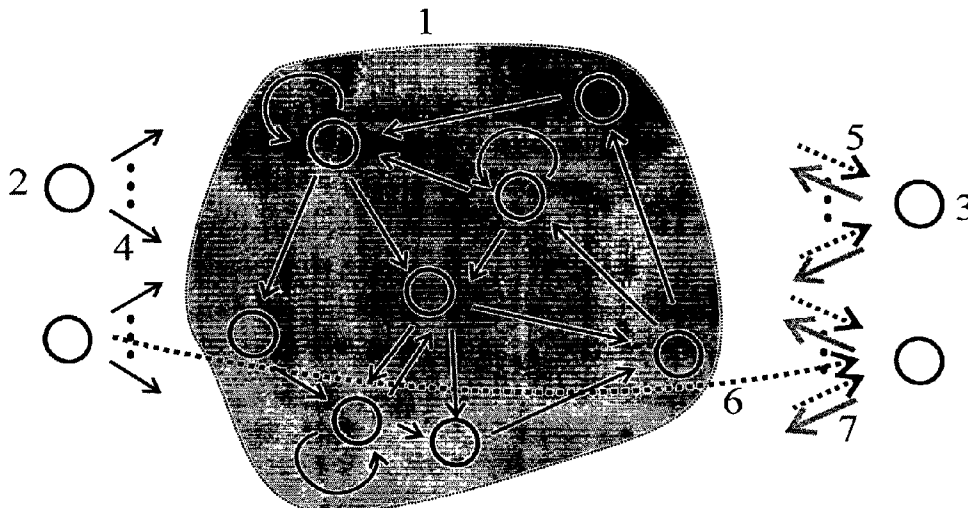
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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- Published:
— with international search report
- (88) Date of publication of the international search report:
21 August 2003

[Continued on next page]

(54) Title: A METHOD FOR SUPERVISED TEACHING OF A RECURRENT ARTIFICIAL NEURAL NETWORK



(57) **Abstract:** A method for the supervised teaching of a recurrent neural network (RNN) is disclosed. A typical embodiment of the method utilizes a large (50 units or more), randomly initialized RNN with a globally stable dynamics. During the training period, the output units of this RNN are teacher-forced to follow the desired output signal. During this period, activations from all hidden units are recorded. At the end of the teaching period, these recorded data are used as input for a method which computes new weights of those connections that feed into the output units. The method is distinguished from existing training methods for RNNs through the following characteristics: (1) Only the weights of connections to output units are changed by learning - existing methods for teaching recurrent networks adjust all network weights. (2) The internal dynamics of large networks are used as a "reservoir" of dynamical components which are not changed, but only newly combined by the learning procedure - existing methods use small networks, whose internal dynamics are themselves competely re-shaped through learning.



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INTERNATIONAL SEARCH REPORT

 Int'l Application No
 PCT/EP 01/11490

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 G06N3/04

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 7 G06N

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)

INSPEC, EPO-Internal, WPI Data, PAJ, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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 Patent family members are listed in annex.

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Date of the actual completion of the international search

19 May 2003

Date of mailing of the international search report

06/06/2003

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INTERNATIONAL SEARCH REPORT

Int. Patent Application No

PCT/EP 01/11490

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Information on patent family members

In International Application No

PCT/EP 01/11490

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