Title: METHODS FOR ENABLING A SCALABLE TRANSFORMATION OF DIVERSE DATA INTO MODELS TO DRIVE THE DISCOVERY OF NEW KNOWLEDGE

Abstract: The present invention relates to a method for the automatic identification of at least one informative data filter from a data set that can be used to identify at least one relevant data subset against a target feature for subsequent hypothesis generation, model building and model testing. The present invention describes methods, and an initial implementation, for efficiently linking relevant data both within and across multiple domains and identifying informative statistical relationships across this data that can be integrated into agent-based models. The relationships, encoded by the agents, can then drive emergent behavior across the global system that is described in the integrated data environment.
INTERNATIONAL SEARCH REPORT

International application No
PCT/US 09/57046

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06F 9/45 (201 0.01 )
USPC - 703/22

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

B. FIELD SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) G06F 9/45 (2010 01 )
USPC - 703/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC 700/29, 30, 31, 55, 706/15, 45, 707/7, 101 (view text search terms below)

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

pubWEST(P GPB,USPT,EPAB,JPAB, PLUR=YES), Google Scholar, FreePatentsOnline, Text search terms transform convert data mining distill network Internet web communication memory storage processor CPU SPU ASIC DSP compute calculate data information hypothesis model pattern generation

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 2008/0091471 A1 (MICHON et al) 17 April 2008 (17 04 2008), entire document, especially Abstract, Figs 1, 5A, para [0013], [0059], [0154], [0159], [0428], [0488], [0577], [0586], [0594], [0861], [0882], [0887], [0905], [0934], [0942], [0992], [0996], [1001], [1021], [1095], [1127], [1290]</td>
<td>21, 23, 24, 26-30</td>
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<td>Y</td>
<td>US 2007/0287473 A1 (DUPRAY) 13 December 2007 (13 12 2007), entire document, especially Abstract, Fig 5, para [0059], [0061], [0064], [0103], [0104], [0124], [0128], [0137], [0138], [0138], [0154], [0155], [0167], [0191], [0239], [0251], [0255], [0266], [0275], [0278], [0279], [0311], [0346], [0347], [0350], [0370], [0375], [0407], [0408], [0416], [0418], [0438], [0473], [0478], [0515], [0530], [0607], [0811], [0912]</td>
<td>1-20, 22, 31, 32</td>
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</table>

Further documents are listed in the continuation of Box C

Date of the actual completion of the international search
18 March 2010 (18 03 2010)

Date of mailing of the international search report
26 MAR 2010

Name and mailing address of the ISAUS
Mail Stop PCT, Attn ISAUS, Commissioner for Patents
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Authorized officer
Lee W Young
PCT/IS (National), 571-272-4300
PCTOPS 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [ ] Claims Nos ___ because they relate to subject matter not required to be searched by this Authority, namely:

2. D Claims Nos ___ because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be earned out, specifically:

3. D Claims Nos ___ because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 64(a).

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Continuation Sheet -

1. [X] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos ___.

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims, it is covered by claims Nos ___.

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.
This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1 in order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I. Claims 1-20 and 31-32. Drawn to a method for automatically identifying at least one informative data filter from a data set that can be used for identifying at least one relevant data subset against a target feature for subsequent hypothesis generation, model building and model testing resulting in more efficient data storage, data management and data utilization comprising an optimum intersection of the one or more informative data filters.

Group II. Claims 21-30. Drawn to a simulation engine comprising a means of developing a simulation system by simulating a system at multiple scales, multiple models or multiple modalities in a complex or complex-adaptive or biological system. Please note there is a reference in claim 21 to “the system of claim 1.” This reference is not understood since claim 1 is directed to a method and therefore claim 21 is being treated as an independent claim not requiring the method steps of claim 1.

The inventions listed as Groups I - II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons. The special technical feature of the Group I invention is a method for automatically identifying at least one informative data filter from a data set that can be used for identifying at least one relevant data subset against a target feature for subsequent hypothesis generation, model building and model testing resulting in more efficient data storage, data management and data utilization comprising an optimum intersection of the one or more informative data filters. The special technical feature of the Group II invention is a simulation engine comprising a means of developing a simulation system by simulating a system at multiple scales, multiple models or multiple modalities in a complex or complex-adaptive or biological system. Please note there is a reference in claim 21 to “the system of claim 1.” This reference is not understood since claim 1 is directed to a method and therefore claim 21 is being treated as an independent claim not requiring the method steps of claim 1. None of these special technical features are common to the other groups, nor do they correspond to a special technical feature in the other groups. Therefore, unity of invention is lacking.