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- (71) Applicant (for all designated States except US): **PA-TIENT TOOLS, INC.** [US/US]; 11101 W. Cooper Drive, Littleton, Colorado 80127 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **MALIK, Alan, David** [US/US]; 11102 W. Cooper Drive, Littleton, Colorado 80127 (US).
- (74) Agent: **MARSH FISCHMANN & BREYFOGLE LLP**; DOCKERY, David F., 8055 E. Tufts Avenue, Suite 450, Denver, Colorado 80237 (US).
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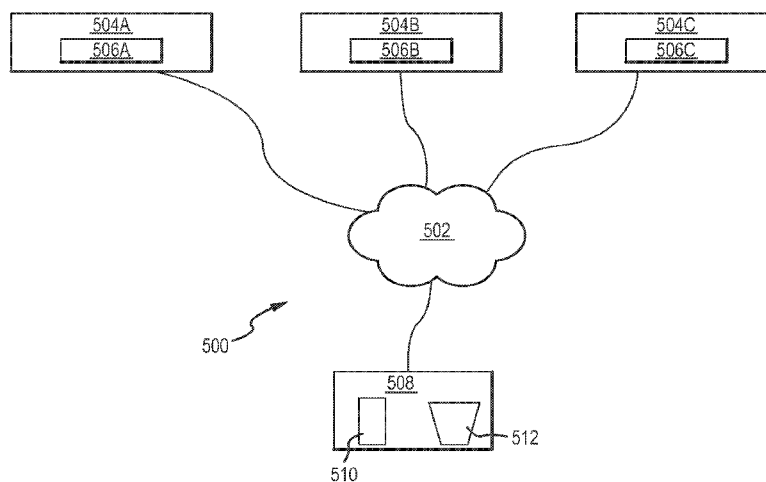


FIG. 13

(57) Abstract: A method and system for assessing a latent trait such as a psychiatric disorder in a test subject. The method includes receiving a test subject's responses to test items that are administered to the test subject to elicit the responses from the test subject. An initial first sub-region probability of the test subject lying within a first sub-region of a first latent trait is determined from the test subject's response to the initial first test item. A subsequent first sub-region probability of the test subject lying within the first sub-region of the first latent trait is then determined using the test subject's response to the subsequent first test item to ascertain a conditional response probability, and using the initial first sub-region probability as a prior first sub-region probability.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/026629

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G06F17/18 (2014.01) USPC - 434/354 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) - G09B 7/00, G06F 17/18, (2014.01) USPC - 434/353, 434/354, 434/362 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched CPC - A61B 1/10, G06F 19/345, G06F 19/363 (2013.01) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatBase, Orbit, Google Patents, Google Scholar,		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,435,324 A (Brill) 25 July 1995 (25.07.1995), entire document	1-37, 54-55
Y	US 2009/0004638 A1 (Stout et al) 01 January 2009 (01.01.2009), entire document	1-37, 54-55
Y	US 2009/0281398 A1 (Hogan) 12 November 2009 (12.11.2009), entire document	1-37, 54-55
A	US 5,059,127 A (Lewis et al) 22 October 1991 (22.10.1991), entire document	1-37, 54-55
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 27 March 2014		Date of mailing of the international search report 25 APR 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/026629

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

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. 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 carried out, specifically:

- 3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

see extra sheet

- 1. 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.:
1-37 and 54-55

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.

Continuation of Box No. III:

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 examined, the appropriate additional examination fees must be paid.

Group I, claims 1-37 and 54-55, drawn to a method for assessing a latent trait in a test subject, comprising the steps of: determining a subsequent first sub-region probability of the test subject lying within the first sub-region of the first latent trait using the test subject's response to the subsequent first test item to ascertain a conditional response probability and the initial first sub-region probability as a prior first sub-region probability, and (c) determining a differential probability value between at least first and second adjacent sub-regions of the first latent trait, and repeating the steps until the differential probability value between the first and second sub-regions is a terminus differential probability value that meets or exceeds a threshold differential probability value. Group II, claims 38-53, drawn to a method for creating a validated evidence probability data set comprising conditional response probabilities and response probabilities for at least a first latent trait, and a method for creating a psychometric measurement instrument protocol comprising a plurality of test items to be administered to a test subject to assess at least a first latent trait in the test subject, comprising the steps of: inputting a criterion measure of each sub-region of a first latent trait in the first test subject and in the subsequent test subject, determining conditional response probabilities within each sub-region of the first latent trait and response probabilities for each response across the first latent trait to create a validated evidence probability data set, and loading a plurality of test items and a validated evidence probability data set associated with the plurality of test items and determining the accuracy of the subsequent test item sequence using the validated evidence probability data set.

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: determining a subsequent first sub-region probability of the test subject lying within the first sub-region of the first latent trait using the test subject's response to the subsequent first test item to ascertain a conditional response probability and the initial first sub-region probability as a prior first sub-region probability, and (c) determining a differential probability value between at least first and second adjacent sub-regions of the first latent trait, and repeating the steps until the differential probability value between the first and second sub-regions is a terminus differential probability value that meets or exceeds a threshold differential probability value as claimed therein is not present in the invention of Group II. The special technical feature of the Group II invention: inputting a criterion measure of each sub-region of a first latent trait in the first test subject and in the subsequent test subject, determining conditional response probabilities within each sub-region of the first latent trait and response probabilities for each response across the first latent trait to create a validated evidence probability data set, and loading a plurality of test items and a validated evidence probability data set associated with the plurality of test items and determining the accuracy of the subsequent test item sequence using the validated evidence probability data set as claimed therein is not present in the invention of Group I.

Groups I and II lack unity of invention because even though the inventions of these groups require the technical feature of determining a response probability from the test subject's response to the a test item for assessing a latent trait in a test subject, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of US 5,059,127 A (LEWIS et al) 22 October 1991 (22.10.1991) and US 2009/0004638 A1 (STOUT et al) 01 January 2009 (01.01.2009). US 5,059,127 A (LEWIS et al) discloses assessing a latent trait in a test subject (Abstract, col. 4 lines 29-37) and teaches determining a response probability from the test subject's response to the a test item (col. 4 lines 32-37, col. 11 line 56-58, col. 13 lines 1-3).

US 2009/0004638 A1 (STOUT et al) teaches determining a response probability from the test subject's response to the a test item (paragraphs 198, 222) for assessing a latent trait in a test subject (Abstract, paragraph 130).

Since none of the special technical features of the Group I or II inventions are found in more than one of the inventions, unity of invention is lacking.