

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 May 2008 (29.05.2008)

PCT

(10) International Publication Number
WO 2008/063973 A3

(51) International Patent Classification:
G06F 7/00 (2006.01) *G06F 15/16* (2006.01)

(21) International Application Number:
PCT/US2007/084464

(22) International Filing Date:
12 November 2007 (12.11.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/865,629 13 November 2006 (13.11.2006) US

(71) Applicant (for all designated States except US): **EXEGY INCORPORATED** [US/US]; Suite 300, 3668 South Geyer Road, St. Louis, MO 63127 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **INDECK, Ronald S.** [US/US]; 729 Gralee Lane, St. Louis, MO 63132 (US). **SINGLA, Naveen** [IN/US]; Apt. 605, 530 Union Boulevard, St. Louis, MO 63108 (US). **TAYLOR, David E.** [US/US]; 3448 Missouri Avenue, St. Louis, MO 63118 (US).

(74) Agents: **VOLK, JR., Benjamin L.** et al.; Thompson Coburn, LLP, One US Bank Plaza, St. Louis, MO 63101 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, 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, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

(88) Date of publication of the international search report:
24 December 2008



WO 2008/063973 A3

(54) Title: METHOD AND SYSTEM FOR HIGH PERFORMANCE DATA METATAGGING AND DATA INDEXING USING COPROCESSORS

(57) Abstract: Disclosed herein is a method and system for hardware-accelerating the generation of metadata for a data stream using a coprocessor (450). Using these techniques, data can be richly indexed, classified, and clustered at high speeds. Reconfigurable logic (402) such a field programmable gate arrays (FPGAs) can be used by the coprocessor for this hardware acceleration. Techniques such as exact matching, approximate matching, and regular expression pattern matching can be employed by the coprocessor to generate desired metadata for the data stream.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/84464

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **G06F 7/00(2006.01),15/16(2006.01)**

USPC: 707/102,104.1,100,2,3

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)
U.S. : 707/102,104.1,100,2,3

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 practicable, search terms used)
google, IEEE Xplore, EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US Publication 2006/0031263 A1 (ARROUYE et al) 9 February 2006 (09.02.2006), paragraphs 8,9,50, 51, 52, 53, 5557, 58; 60, 70, and 71.	1-20, 25-52, 65-69, 74-83, 89-107, 115-121, 126-130
Y	US Patent 7,093,023 B2 (LOCKWOOD et al) 15 August 2006 (15.08.2006), column 8 lines 24 - column 9 line 29.	1-20, 25-52, 65-69, 74-83, 89-107, 115-121, 126-130
X	US Publication 2005/0187974 A1 (GONG) 25 August 2005 (25.08.2005), Figure 2, paragraphs 39, 41, 42, 43, 44, 47, 48, 49, 50 and 55.	21-24, 53-64, 70-73, 84-88, 122-125

Further documents are listed in the continuation of Box C.

See patent family annex.

* 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 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

28 August 2008 (28.08.2008)

Date of mailing of the international search report

02 OCT 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Tim T Vo

Telephone No. (571)305-3900

T. Roberts for

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/84464

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

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

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation 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 an additional fee, this Authority did not invite payment of any additional fee.
 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.
- No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

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, claim(s) 1-20, 25-52, 65-69, 74-83, 89-107, 115-121, and 126-130 drawn to an indexing method to generate an index for metadata, classified in class 707, subclass 104.1.

Group II, claim(s) 21-24, 53-64, 70-73, 84-88, 108-114, and 122-125, drawn to a method to generate metadata for streaming data, classified in class 707, subclass 102.

The inventions listed as Groups I and 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 groups are related as combination/subcombination, and the combination as claimed does not require the particulars of the subcombination as claimed because the method of generating metadata from streaming data does not require the indexing method based on metadata, With the subcombination of generating an index having separate utility, such as being utilized in a more efficient search query.