(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 May 2009 (14.05.2009)

PCT

(10) International Publication Number
WO 2009/061814 A3

(51) International Patent Classification:
G06F 9/46 (2006.01) *G06F 15/00* (2006.01)
G06F 9/06 (2006.01) *G06F 7/00* (2006.01)
G06F 9/308 (2006.01)

(21) International Application Number:
PCT/US2008/082475

(22) International Filing Date:
5 November 2008 (05.11.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/985,488 5 November 2007 (05.11.2007) US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, 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, ST, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI

[Continued on next page]

(54) Title: LOSSLESS DATA COMPRESSION AND REAL-TIME DECOMPRESSION

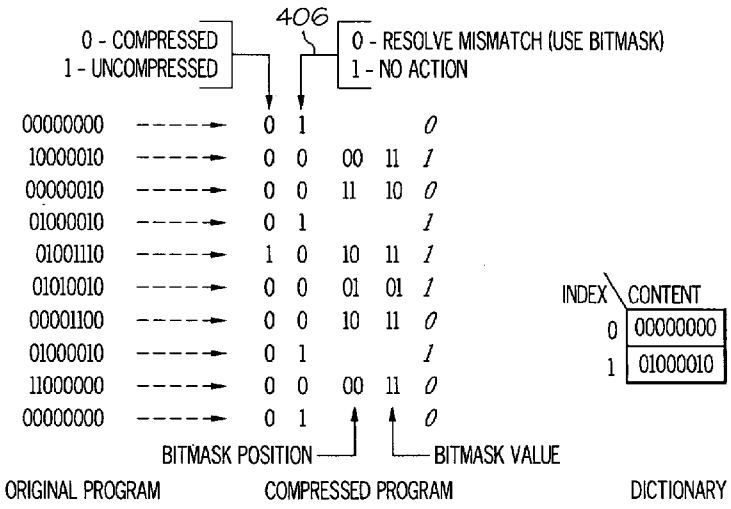


FIG. 5

(57) Abstract: A method, information processing system, and computer program storage product store data in an information processing system. Uncompressed data is received and the uncompressed data is divided into a series of vectors. A sequence of profitable bitmask patterns is identified for the vectors that maximizes compression efficiency while minimizes decompression penalty. Matching patterns are created using multiple bit masks based on a set of maximum values of the frequency distribution of the vectors. A dictionary is built based upon the set of maximum values in the frequency distribution and a bit mask savings which is a number of bits reduced using each of the multiple bit masks. Each of the vectors is compressed using the dictionary and the matching patterns with having high bit mask savings. The compressed vectors are stored into memory. Also, an efficient placement is developed to enable parallel decompression of the compressed codes.

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(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
27 August 2009

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/082475

A. CLASSIFICATION OF SUBJECT MATTER

G06F 9/46(2006.01)i, G06F 9/06(2006.01)i, G06F 9/308(2006.01)i, G06F 15/00(2006.01)i, G06F 7/00(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)

IPC G06F

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 since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKIPASS (KIPO internal) " Keyword : (data, code), (compress, decompress, uncompress), (vector, stream), (bit mask, bitmask, bit -mask), (dictionary) "

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	An Efficient Code Compression Technique using Application-Aware Bitmask and Dictionary Selection Methods (SEOK-WON SEONG , et al.) 20 Apr. 2007	1-11,16-20
Y	Proceedings of the conference on Design, automation and test in Europe, April 16-20, 2007, Nice, France (Retrieved from the Internet: <http://www.cise.ufl.edu/~prabhat/Publications/date07.pdf> on 28.06.2008) Abstract, Pages 582-586	12-15
Y	A bitmask-based code compression technique for embedded systems (SEOK-WON SEONG , et al.) 09 Nov. 2006	12-15
A	Proceedings of the 2006 IEEE/ACM international conference on Computer-aided design, November 05-09, 2006, San Jose, California (Retrieved from the Internet : <http://www.cise.ufl.edu/~prabhat/Publications/iccad06.pdf> on 28.06.2008) Abstract, Section 3.1 Compression Algorithm	1-11,16-20

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 JUNE 2009 (29.06.2009)	**29 JUNE 2009 (29.06.2009)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/082475

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	A hybrid code compression technique using bitmask and prefix encoding with enhanced dictionary selection (SYED IMTIAZ HAIDER, et al.) 03 Oct. 2007 Proceedings of the 2007 international conference on Compilers, architecture, and synthesis for embedded systems, September 30-October 03, 2007, Salzburg, Austria (Retrieved from the Internet : <http://www.cecs.uci.edu/~papers/esweek07/cases/p58.pdf> on 28.06.2008) Abstract, Pages 58-61	1-20
A	A Hamming Distance Based VLIW/EPIC Code Compression Technique (MONTSERRAT ROS, et al.) 25 Sep. 2004 Proceedings of the 2004 international conference on Compilers, architecture, and synthesis for embedded systems, September 22-25, 2004, Washington DC, USA (Retrieved from the Internet : <http://www.cs.uq.oz.au/~peters/papers/ros_sutton_cases2004.pdf> on 28.06.2008) Abstract, Pages 132-137	1-20
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/082475

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