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(54) Title: METHOD AND SYSTEM FOR PERFORMING OPERATIONS ON DATA AND TRANSFERRING DATA
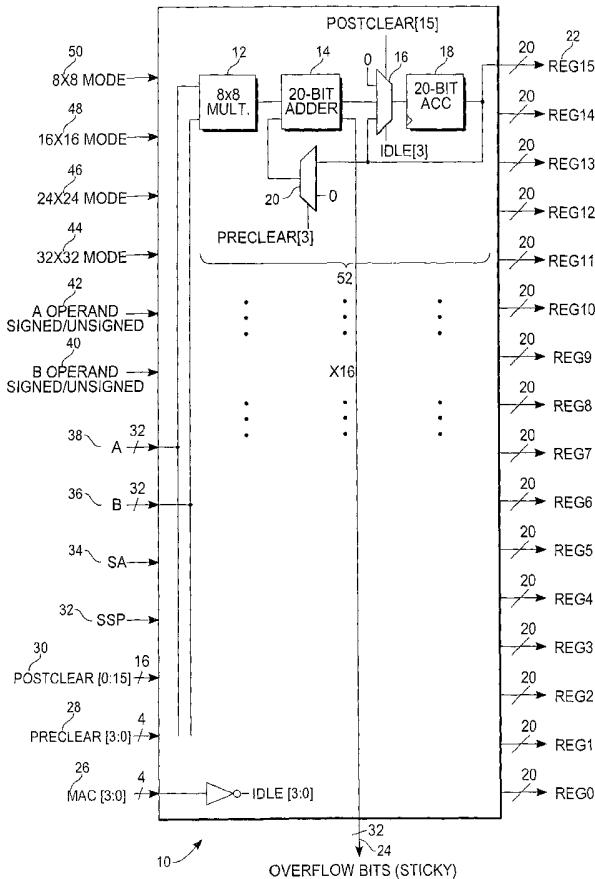
(57) Abstract: Methods and systems for performing
operations on data, such as parallel integer multiply
accumulate operations on packed data and SIMD
operations, and transferring data, are provided. A
multiple accumulate unit ("MAC") (10) performs
operations on packed integer data and allows results
to be individually retrieved from registers (22) and the
corresponding accumulator (18) cleared after the read
cycle. SIMD instructions, including parallel absolute
value and parallel conditional move instructions, as
well as a method and circuit for saturating results
of operations are provided. Scatter/gather mode
for DMA transfer of data provides a table of buffer
descriptors which may be used in automatic buffer
switching and a table of packet descriptors describing
location and size of incoming data, thus decoding
packet sizes from buffer sizes.

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, IT, LU, MC, 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).

Declarations under Rule 4.17:
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/24667

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 7/48
US CL : 708/523,513

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. : 708/523,513,501

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/0097391 A (SAULSBURY) 22 May 2003, see the entire document	1-22
A	US 6,385,634 A (PELEG et al) 7 May 2002, see the entire document	1-22
A	US 6,282,556 A (CHEHRAZI et al) 28 August 2001, see the entire document	1-22
A	US 6,230,180 A (MOHAMED) 8 May 2001, see the entire document	1-22

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

*	Special categories of cited documents:	"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
"A"	document defining the general state of the art which is not considered to be of particular relevance		
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"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	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 January 2005 (25.01.2005)	08 FEB 2005
Name and mailing address of the ISA/US	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450	David H. Malzahn
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Form PCT/ISA/210 (second sheet) (January 2004)

Box IV TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

Methods and systems for performing operations on data, such as parallel integer multiply accumulate operations on packed data and SIMD operations, and transferring data, are provided. A multiply accumulate unit ("MAC") (10) performs operations on packed integer data and allows results to be individually retrieved from registers (22) and the corresponding accumulator (18) cleared after the read cycle. SIMD instructions, including parallel absolute value and parallel conditional move instructions, as well as a method and circuit for saturating results of operations are provided. Scatter/gather mode for DMA transfer of data provides a table of buffer descriptors which may be used in automatic buffer switching and a table of packet descriptors describing location and size of incoming data, thus decoding packet sizes from buffer sizes.