



US007149867B2

(12) **United States Patent**  
**Poznanovic et al.**

(10) **Patent No.:** **US 7,149,867 B2**  
(45) **Date of Patent:** **Dec. 12, 2006**

(54) **SYSTEM AND METHOD OF ENHANCING EFFICIENCY AND UTILIZATION OF MEMORY BANDWIDTH IN RECONFIGURABLE HARDWARE**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/869,200**

(22) Filed: **Jun. 16, 2004**

(65) **Prior Publication Data**

US 2004/0260884 A1 Dec. 23, 2004

**Related U.S. Application Data**

(60) Provisional application No. 60/479,339, filed on Jun. 18, 2003.

(51) **Int. Cl.**  
**G06F 12/00** (2006.01)

(52) **U.S. Cl.** ..... **711/170; 711/154**

(58) **Field of Classification Search** ..... **711/170-173; 712/15**

See application file for complete search history.

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*Primary Examiner*—Gary Portka

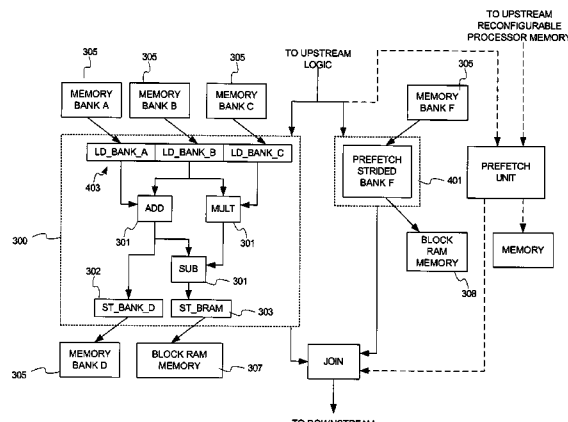
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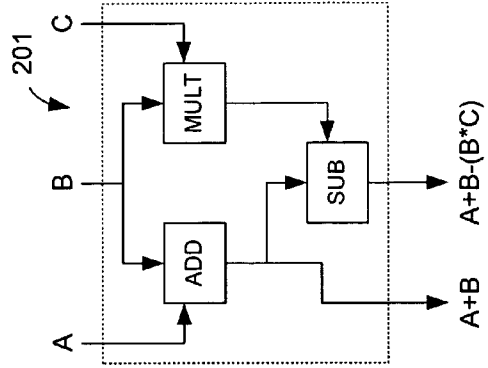
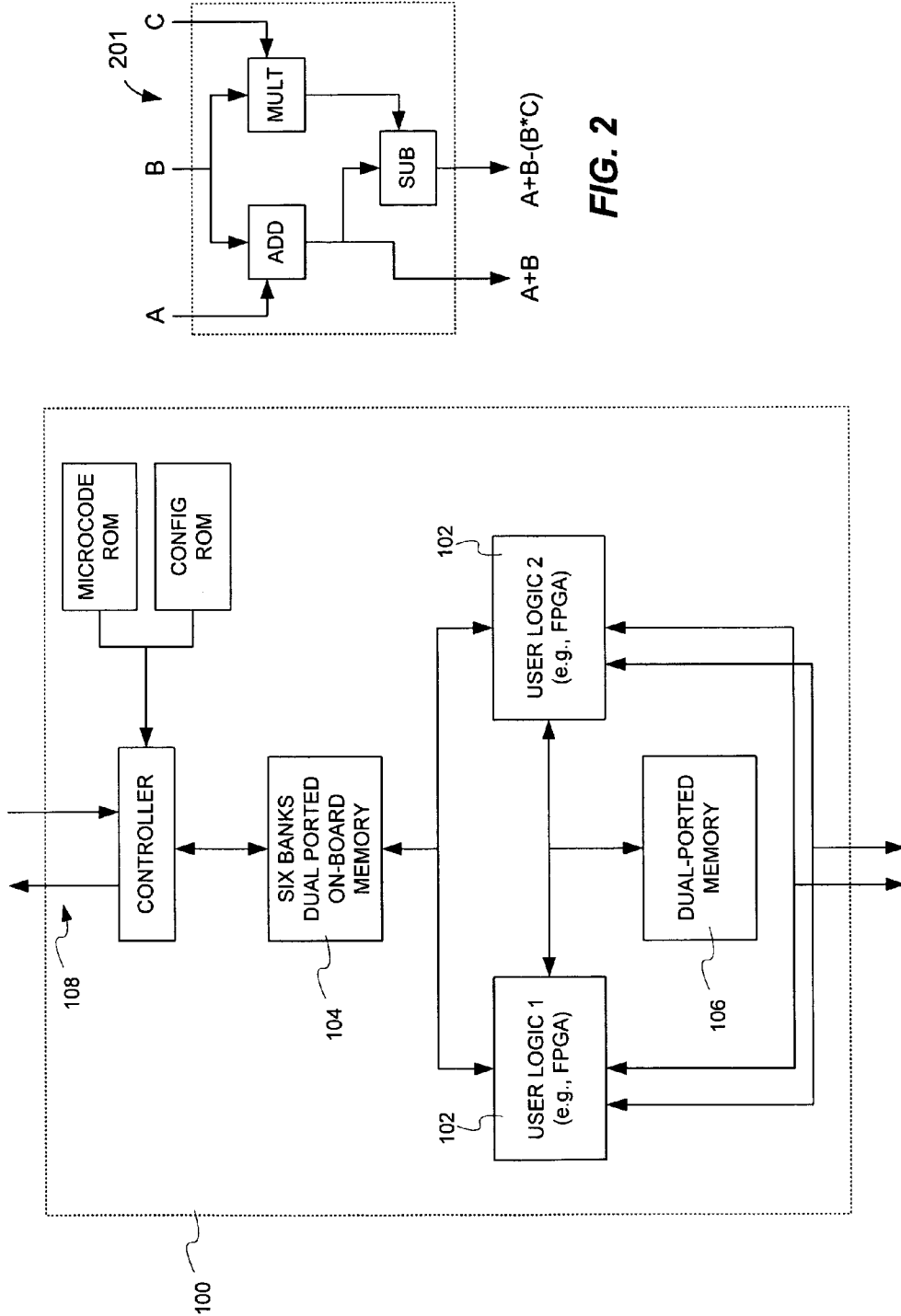
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(57) **ABSTRACT**

A reconfigurable processor that includes a computational unit and a data prefetch unit coupled to the computational unit, where the data prefetch unit retrieves data from a memory and supplies the data to the computational unit through memory and a data access unit, and where the data prefetch unit, memory, and data access unit is configured by a program. Also, a reconfigurable hardware system that includes a common memory; and one or more reconfigurable processors coupled to the common memory, where at least one of the reconfigurable processors includes a data prefetch unit to read and write data between the unit and the common memory, and where the data prefetch unit is configured by a program executed on the system. In addition, a method of transferring data that includes transferring data between a memory and a data prefetch unit in a reconfigurable processor; and transferring the data between a computational unit and the data prefetch unit.

**19 Claims, 12 Drawing Sheets**





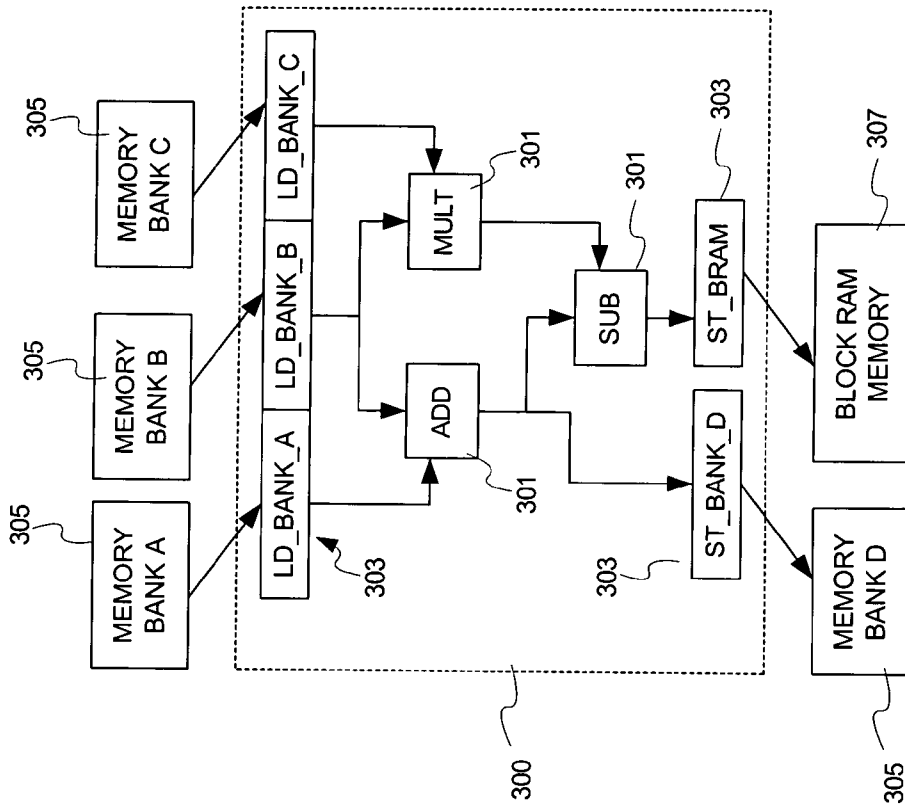


FIG. 3

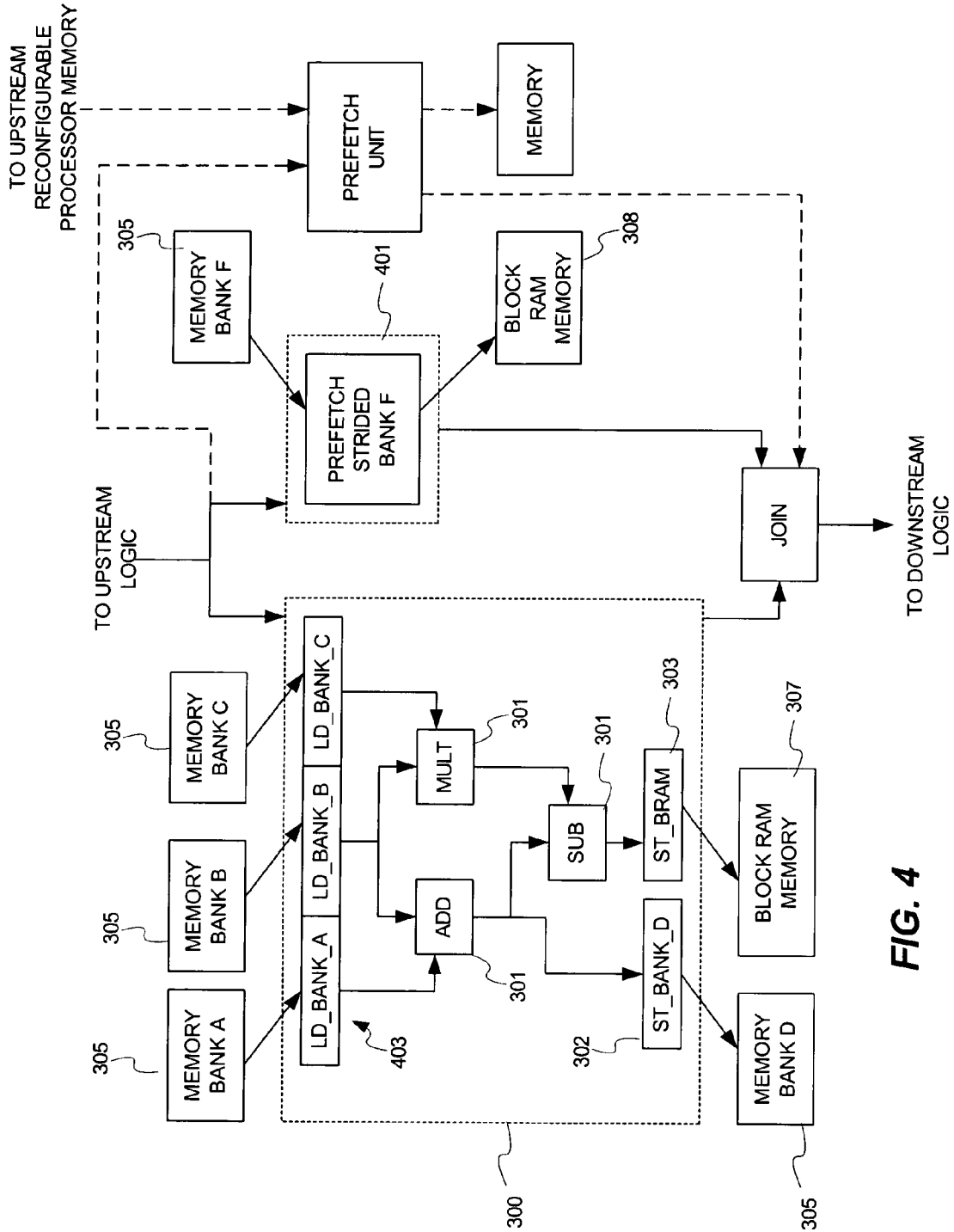


FIG. 4

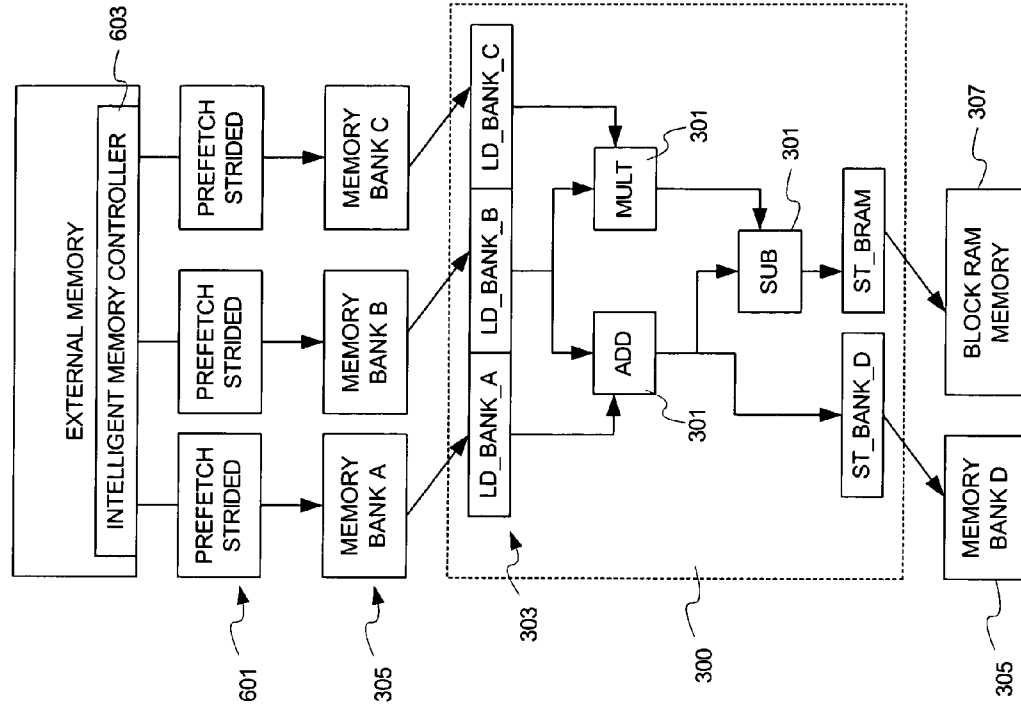


FIG. 6

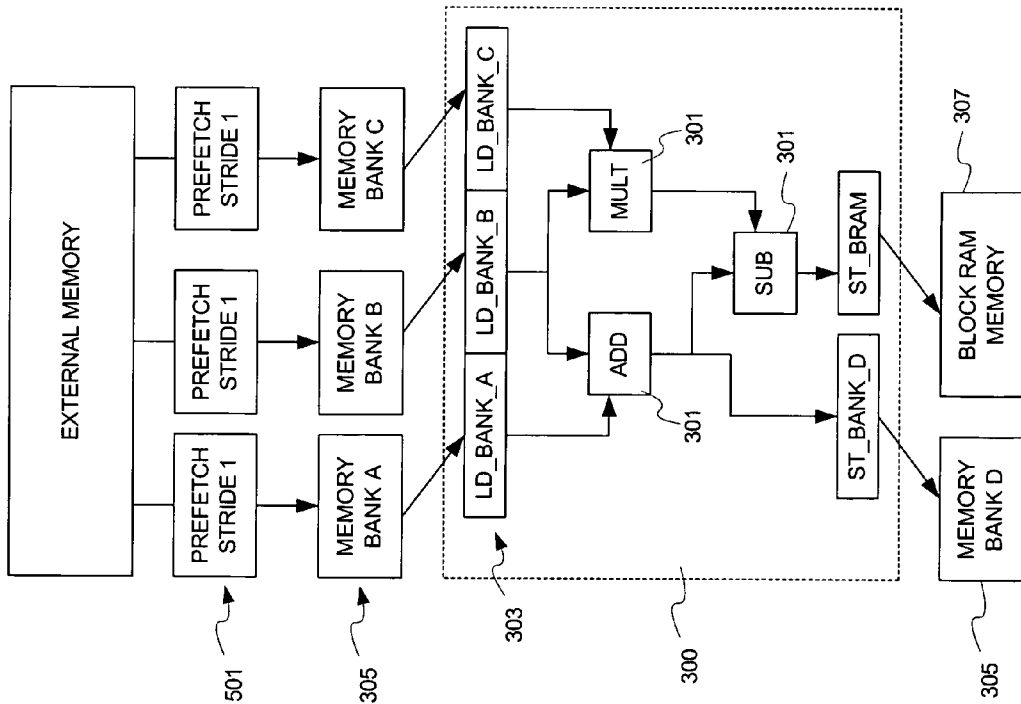


FIG. 5

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