TECHNOLOGY

Efficient Mechanisms for Thread Handling in Multithreaded Computer Systems

OVERVIEW

During the 1980s and the early 1990s, quite a few very talented computer science researchers worked on the following problem: Seek the "ultimate" parallel programming model that will allow easy expression of parallel algorithms and their programs in the model, as well as validation of the model by algorithmic paradigms and solutions for as many problems as possible. In this fierce "battle of ideas", the one approach that has beaten all its competitors by a truly wide margin was the PRAM approach. As early as 1988, standard algorithms textbooks started including significant chapters on PRAM algorithms,

Motivation for the current invention is driven by PRAM. As the computer industry moves to greater parallelism there will be a need for using parallelism for faster completion of single computational tasks.

One of the promising approaches is based on using concurrent computational threads to replace the traditional single thread approach, Concurrent "virtual" threads are explicitly defined in a parallel program, or they can be derived from parallel (or serial) programs and need to be implemented in hardware comprising multiprocessor. In some cases, each among several concurrent threads may spawn more threads and each of these threads may further spawn threads. Efficient hardware and software mechanisms are provided by this invention in order to translate virtual threads occurring in a variety of situations into threads that can execute efficiently on hardware.

For more information please contact the University of Maryland 301-405-3947 or by e-mail at otc@umd.edu

APPLICATIONS

parallel processing, high performance computing

ADVANTAGES

provides a programming model to allow program management of threads

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

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CATEGORIES

- Information Technology
- Software + Algorithm

EXTERNAL RESOURCES

- US Patent 8,209,690

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