

Abstract

The Goal

To this work is the study of organization of parallel computing on graphics processors. Modern GPUs can be used not only as graphic calculators, but as a general-purpose calculators.

Research relevance

At the moment there is one big problem - information and data processing in preset time. To solve this problem we need to use all available resources including graphics processors. The future of computing is using parallel algorithms, parallel computing on graphics processors developed quite rapidly. Research conducted in this paper is applied to the organization of parallel computation on graphics processors, so they are quite relevant.

Task resolved

In the work are dealt with the modern technologies of parallel computing on graphics processors. Given results of using graphics processors for computational tasks and evaluate the effectiveness and suitability for further use.

Results achieved

The result of work is an analysis of the organization of parallel computation on graphics processors. Also were practical results: testing, which proved expedient to use software solutions for the organization of parallel computation on graphics processors for the class of problems with a high degree of parallelism.

Scientific novelty

In the work provides an overview of modern technologies for parallel computing on graphics processors. Held testing and analysis of computational tasks that can be run on graphics processors.

The practical value

The practical value of the work is in fact, that it was a test program realization of parallel computation on graphics processors, has been shown using effectiveness for computational tasks.

Conclusions and recommendations

Studies demonstrated the usefulness of software solutions for parallel computing on GPUs for class of problems with a high degree of parallelism. With what a lot of data application works, the more apparent becomes the advantage of using the GPU than the CPU. CUDA technology and OpenCL have relatively the same speed of the solution computational problems on graphics processors. Technologies of parallel computing on graphics processors allow increase applications speed in hundreds times. In addition, each user PCs can get GPGPU technologies on desktop.

The work done by 97 pages, contains 5 tables and 43 illustrations. In the preparation of the references to 15 sources.

Keywords: Graphics processing unit, central processing unit, CUDA, ATISStream, OpenCL.