

Assignment 3

Take the second general problem, which have been discussed in the lab classes and for which you have developed both a multithreaded and a multiprocess solution. The aim now is to convert it into a CUDA program to be run in a GPU under Linux.

The kernel should compute the value of the determinant of a given matrix and only the matrices whose coefficients are stored in a given file are to be considered.

Two approaches should be tried

- i) the threads in a block thread process successive matrix rows
- ii) the threads in a block thread process successive matrix columns.

In both approaches, the best running configuration should be sought, the execution times should be compared with running similar kernels in the CPU and the following question should be answered "Is it worthwhile to use the GPU to run this kind of problem?".

GRADING

- development and validation of a CUDA application based on either approach – 13 points
- development and validation of a CUDA application based on the two approaches – 20 points.

DELIVERABLES

- an archive, named `CLE3_T$G#.zip` (where \$, equal to 1 or 2, means the lab number, and #, equal to 1, ... , 10, means the group number) containing both the source files of your solution to the two problems and a pdf file, named `present.pdf`, up to 6 pages (power point like), where the main ideas of the design of the solutions to the two problems and the results that were obtained, are discussed
- the archive should result from the compression of a directory, named `CLE3_T$G#`, containing two subdirectories, named `prog1` and `prog2`, and the file `present.pdf`.

DEADLINE

June, 26, at midnight.