Université de Pau et des Pays de l'Adour
Département de Mathématiques
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M2-BigData : GPGPU
Chapter 13 – Exercice 2

Objectives

Parallelize a matrix-matrix multiplication algorithm using OpenACC.

Instructions

From the given code (host sequential matrix multiplication) write an OpenACC version with explicit data management. Write 3 versions :

1. naive version with only `parallel` and `loop` directives. Make sure that you take into account all informations given by the compiler
2. version with enhanced description of the algoritm `collapse` or `tile`.
3. optimal version with both description of the algorithm and association to OpenACC levels of parallelism.

Questions

1. Explain all your choices of optimisation in version 2 and 3.
2. Compare all the 5 versions of matrix multiplication you wrote so far : 2 CUDA versions from chapter 4 and 3 from this exercice. What is the best version ? EXPLAIN