Parallel Programming Project

Master HPC-AI

2020-2021

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Due to December 1st 2020

Project objectifs :

- MPI Parallelisation of the dense matrix-vector product implemented in TP2/densemv_mpi.cpp
- Realize a benchmark with the matrix sizes nx = 50, 100, 150 and 200 for a number of cores np = 1, 2, 4, 8, 12, 16 and 24. The benchmark should be realized with the submission scripts run. The enclosed script should be modified with the project path, and executable names. The loop on the matrix sizes nx and the number of cores np are already written in the script.
- The performance results of the tests should be gathered in a 2 pages benchmark report including executing time tables, performance and speed up curves, and the description of the tests.
- Implement the kmean image processing segmentation algorithm in IMGProcessing/KmeanAlgo.h and test it in TP4/img_kmean.cpp
- Parallelisation of the kmean image processing segmentation with OpenMP, TBB and MPI
- Realize a benchmark for a number of cores np = 1, 2, 4, 8, 12, 16 and 24. The benchmark should be realized with the submission scripts run.

Send me by mail before December 1st 2020 :

- the benchmark report,
- commit and push developpement in a branch dev-mshpcai-2020-login
- the path on the cluster of your project.

If you have any problem or questions, send me a mail explaining your problem and attaching the log files with your problems.