

Project:

Subject: Image Filter (motion blur).

Algorithm: Both implementations divide the image in multiple grids and perform the multiplication with the filter matrix with each pixel from them. Every pixel from the result image is the sum of the corresponding pixel from the source multiplied with the center of the filter matrix and the neighbouring pixels multiplied with the other pixels from the filter matrix.

Synchronization: There's no need for locks or conditional variables because all threads/processes are independent.

Performance:

- Java Thread Pool (image size 600x400):
 - 20x20 grid size: 2901ms
 - 50x50 grid size 2832ms
 - 100x100 grid size: 3312ms
 - 200x200 grid size: 3650ms
- C++ Open-MPI (image size: 600x400):
 - 3 procs: 1460ms
 - 5 procs: 1505ms
 - 9 procs: 1699ms
 - 20 procs: 4094ms