Laboration 1 - TDDC78

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1 Program description

1.1 Threshold filter

This program calculates the average intensity of the image and makes all pixels with a higher-than-average value white, and all other pixels black.

The whole image is read on the root node. The root node also calculates the average intensity of the image. The calcuated intensity is sent to all other nodes via MPI broadcast.

The image data array is split in as many parts as there are nodes, and each node gets its own part via MPI scatter. Since each node needs to know the data length to recieive, this is done in two steps where the data length is sent via MPI broadcast, and then sent with MPI scatter. Each node then runs the threshold filter on its own part of the image. MPI gather then reassembles the resulting image, which is written to disk by the root node.

1.2 Blur filter

2 Execution times