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Cuda Color to Gray Report

Objective:

The goal of this project is to use the Cuda C++ programming language to convert a color image to grayscale using the individual cores of a GPU. This is different than the previous two implementations of this algorithm in the sense that each core is responsible for one (and only) one pixel. Instead of chunking the image, allocating a chunk to each thread, and collecting the chunks, the averaging function is global for each GPU and each pixel is converted.

Results:

The total time to execute was .220000 seconds. This is a significant improvement over mpi4py (.8 seconds with 6 cores) but not as fast as OpenMP which was able to convert the image in .06 seconds with 8 threads.