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ISC 5318 Color to Gray Report
Professor Wang Spring 2022

Color to Gray Project Report

1. Objective of the project:

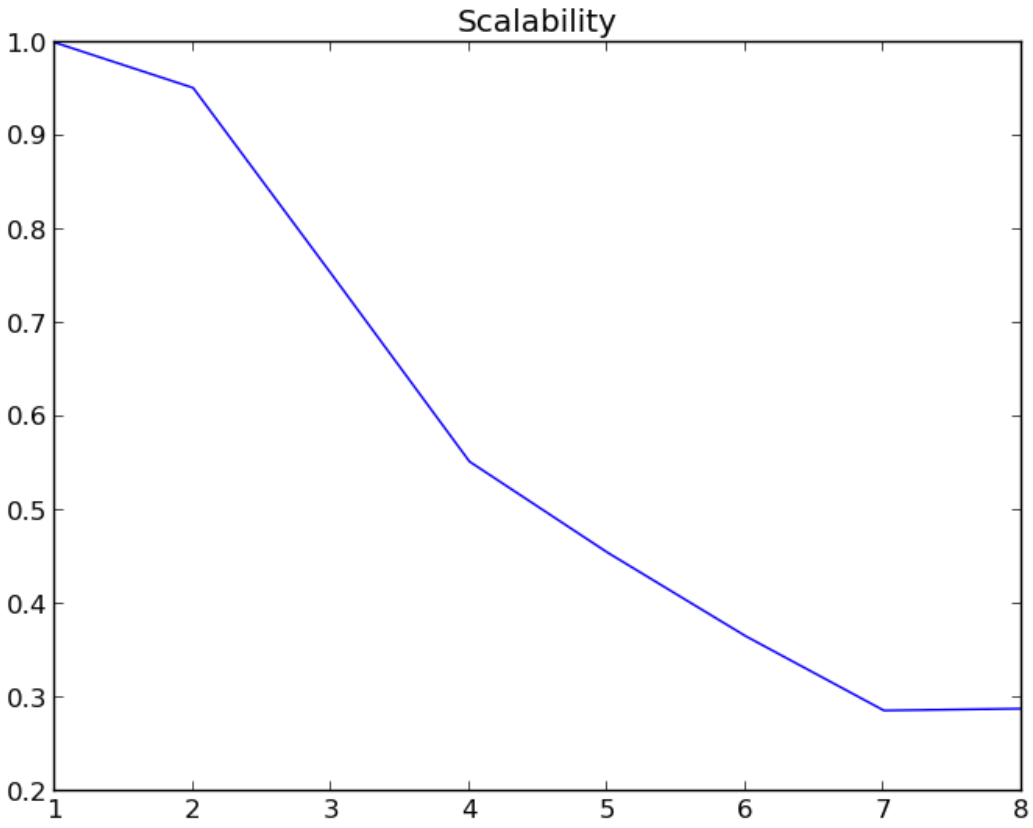
   The objective of this project is to convert an image of any size from color to grayscale using OpenMP by converting chunks of the image simultaneously.

2. Details about how you completed the project:

   This project was completed downstairs on the RedHat Linux machines in DSL 152 using Geany as the IDE. I worked alone, and mainly used this guide to assist me.

3. Results:

Number of threads	Elapsed time (seconds)
1	.156800
2	.082382
3	.069421
4	.070965
5	.068908
6	.071442
7	.078217
8	.067950



4. Did you do anything to improve its performance?

   NO. Once I was able to produce the grayscale image I jumped 10 feet in the air for joy and DID not want to continue. I ran into a lot of bugs, so I will develop the next section more than this one.

5. Bugs encountered and how I fixed them

   The main bug was that my image would only be grayed for the last chunk, and other chunks were somewhat gray. Some threads would stop processing early as well. It took me a while to figure out why this was happening.

   The issue was that the variables row and col were declared outside of the parallel block, therefore each for loop was sharing row and column indexes.

   Once I defined the row col variables inside the for loop (same as making the variables private in the pragma statement) the program executed flawlessly.

Other bugs encountered included segmentation faults when I had an incorrect scheme to chunk the image, and problems with the makefile (had to include -fopenmp). Also a variety of issues with Xcode and the g++ compiler on Mac.