

Grand Central Dispatch

{ Alice Wang and Bryan Chen

Agenda

- ¶ Project Overview
- ¶ Results
 - ☒ Performance comparison
 - ☒ Code comparison
- ¶ Future Work
- ¶ Questions

Project Overview

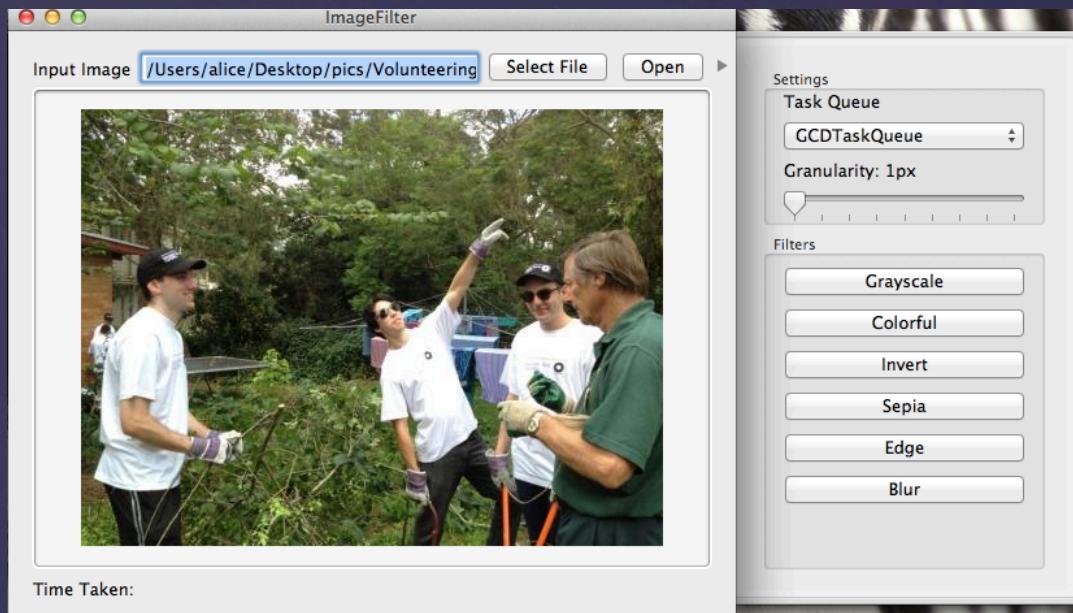


Image filtering application used to benchmark GCD performance



Investigate performance of GCD when the following variables is changed:

- number of tasks
- number of applications

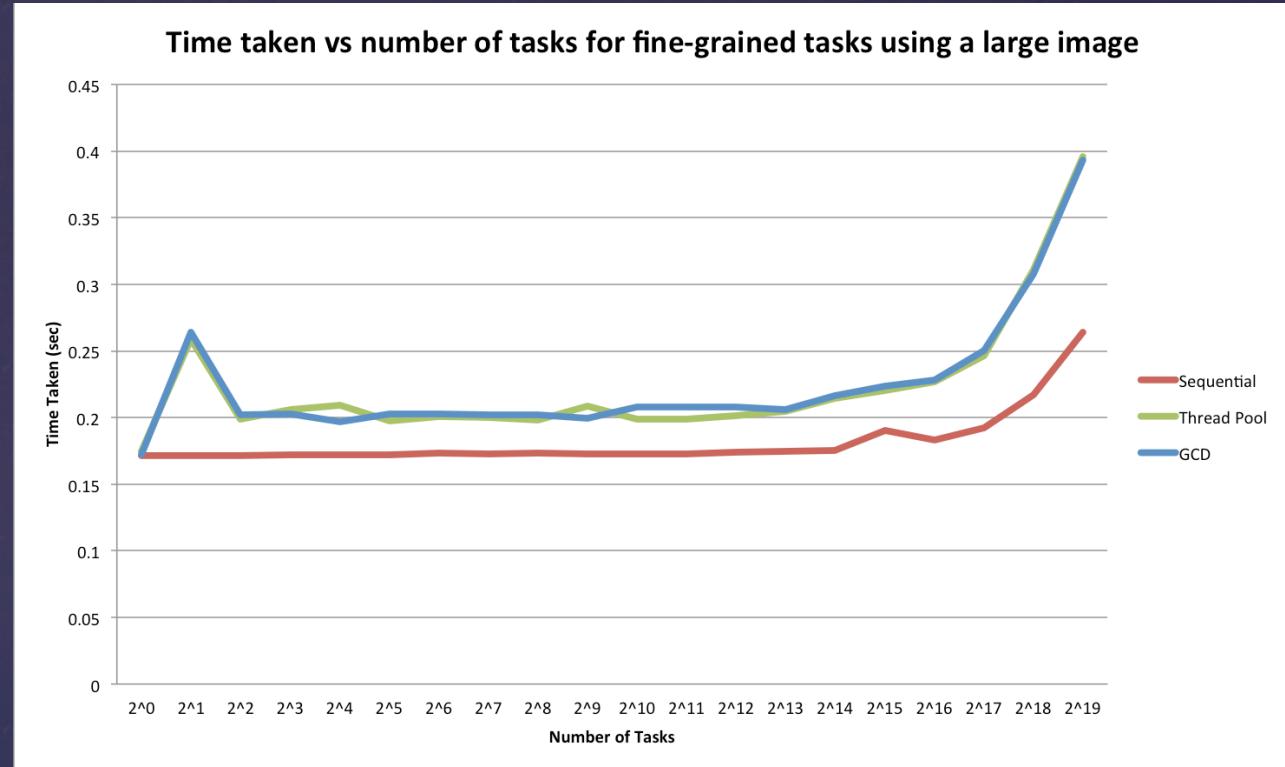
- ❖ Hardware Overview

- ❖ Model Name: iMac
- ❖ Processor Name: Intel Core i5
- ❖ Processor Speed: 2.7 GHz
- ❖ Number of Processors: 1
- ❖ Total Number of Cores: 4
- ❖ L2 Cache (per Core): 256 KB
- ❖ L3 Cache: 6 MB
- ❖ Memory: 8 GB

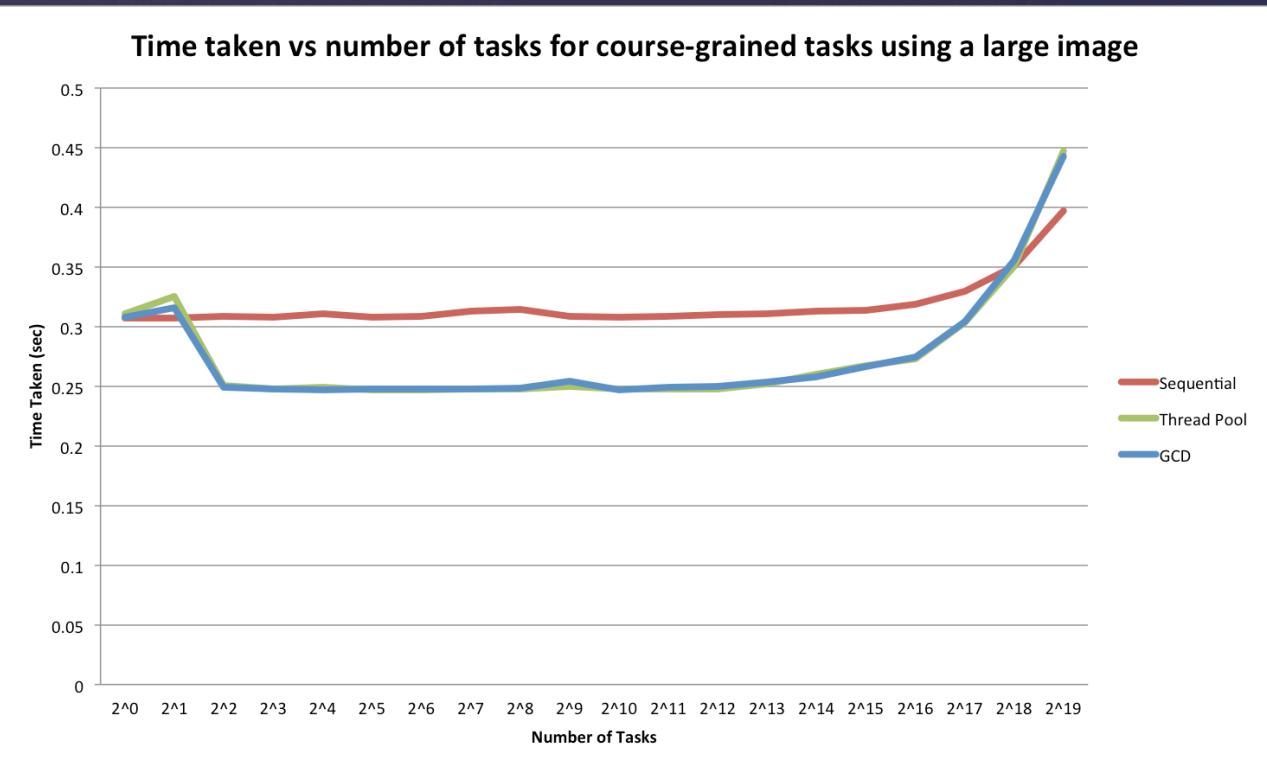
- ❖ Size of Images Used

- ❖ small: $1024 * 640 = 655\,360$ pixels
- ❖ large: $2560 * 1600 = 4\,096\,000$ pixels

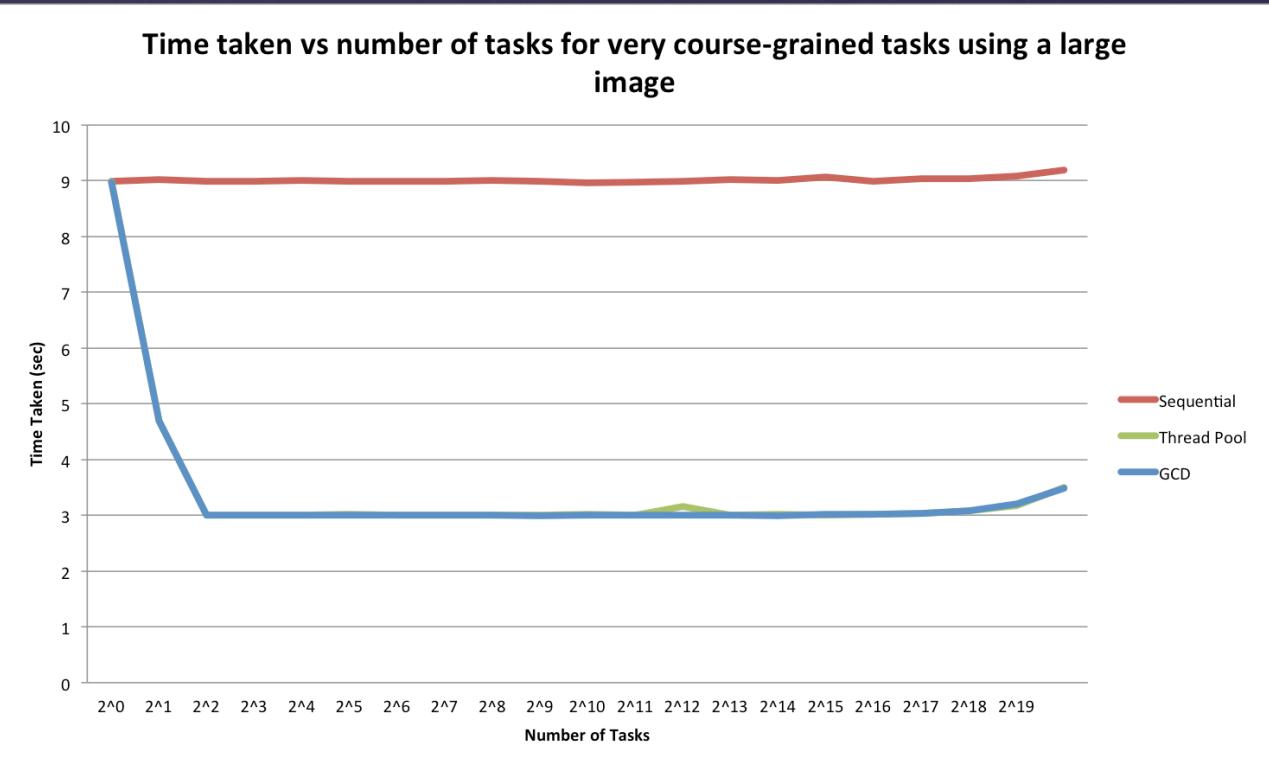
Experiment Environment



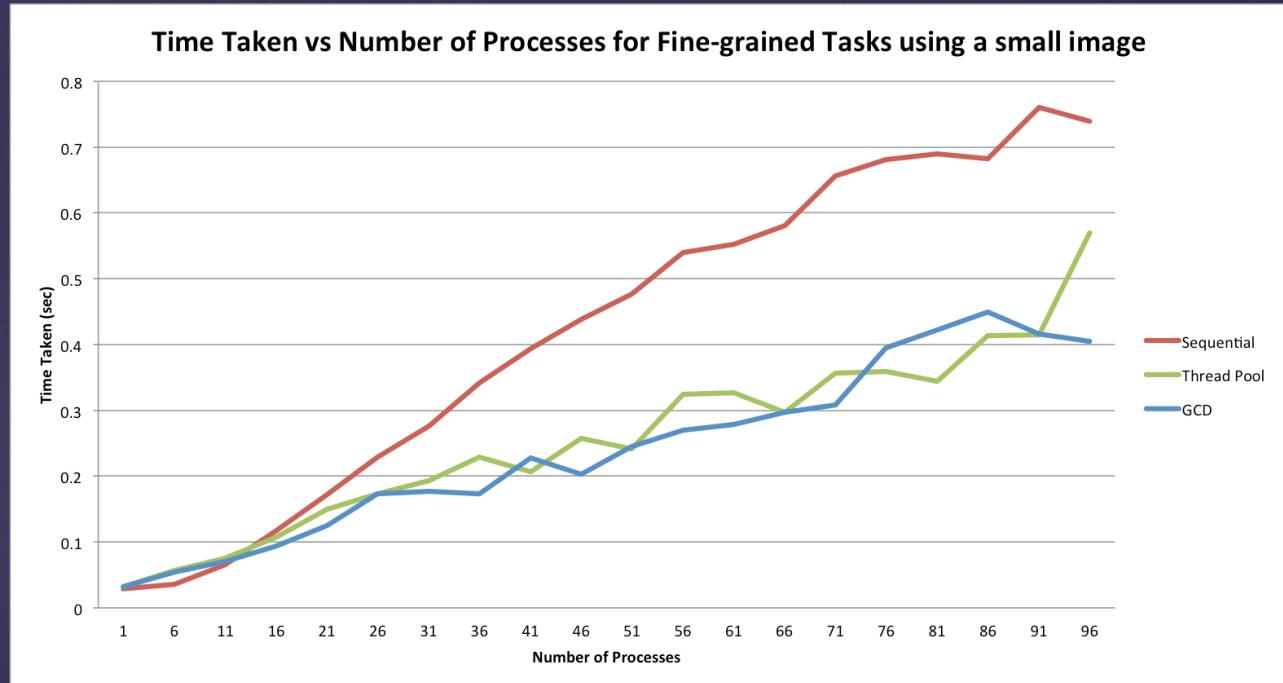
Results - number of tasks



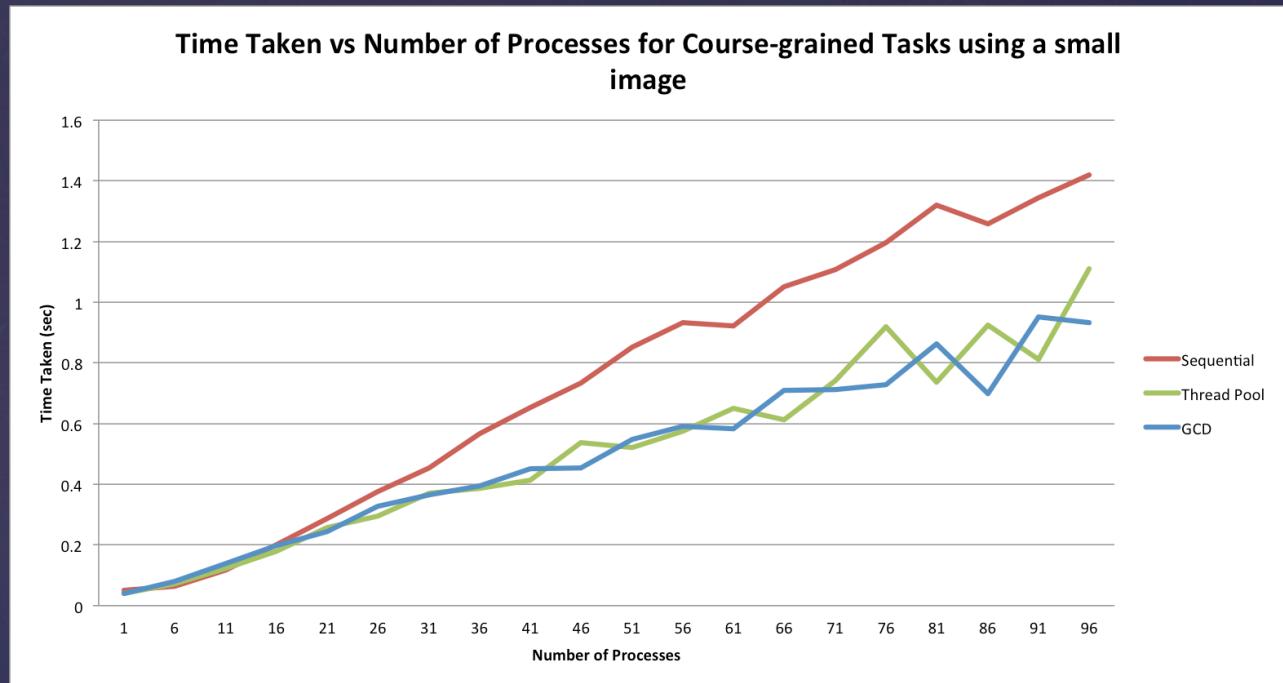
Results - number of tasks



Results - number of tasks



Results – number of apps



Results – number of apps

- Number of lines of code
 - Thread pool implementation: 83
 - Thread per task implementation: 15
 - GCD implementation: 7

Results – Programming effort

- Investigate the performance differences using different priority queues.
- Investigate CPU percentage usage.
- Investigate performance using different number of cores.
- Investigate differences between GCD and thread pool by varying the number of threads in the thread pool.

Future Work

Questions?