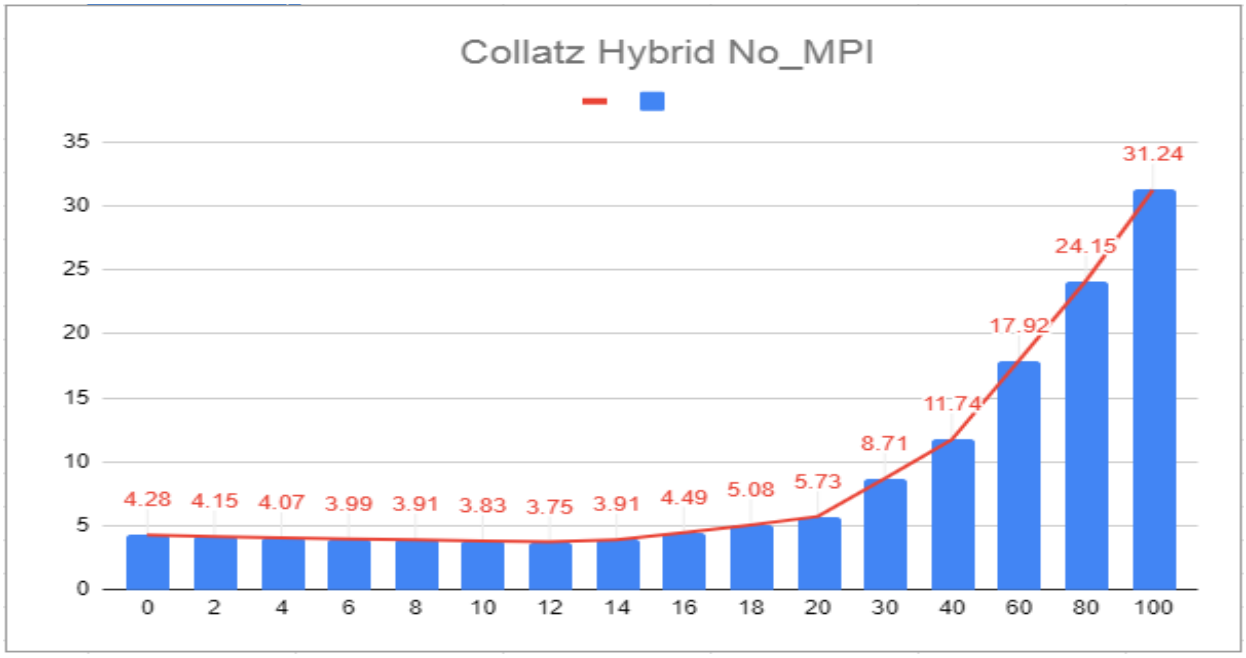
Hunter Noey
Computer Networks

Parallel Project #6

6.1a.



6.1b. Bottleneck; the increased CPU usage cannot keep up with the GPU, therefore the time begins to slowdown. For Lonestar 5 there are 12 nodes per CPU socket, so once the percentage exceeds 12% (the number of nodes) we experience performance decline.

6.1c. 12% usage of the CPU yields the highest performance.

6.1d. 12% is 1.14 times faster than using just the GPU.

6.1e. 20 threads are used, and the number of threads is specified in the .sub file.

6.1f. The GPU Nodes on LoneStar5 have 10 cores, and there is one CPU socket. Hyperthreading is enabled with 20 threads per node.

6.2a.

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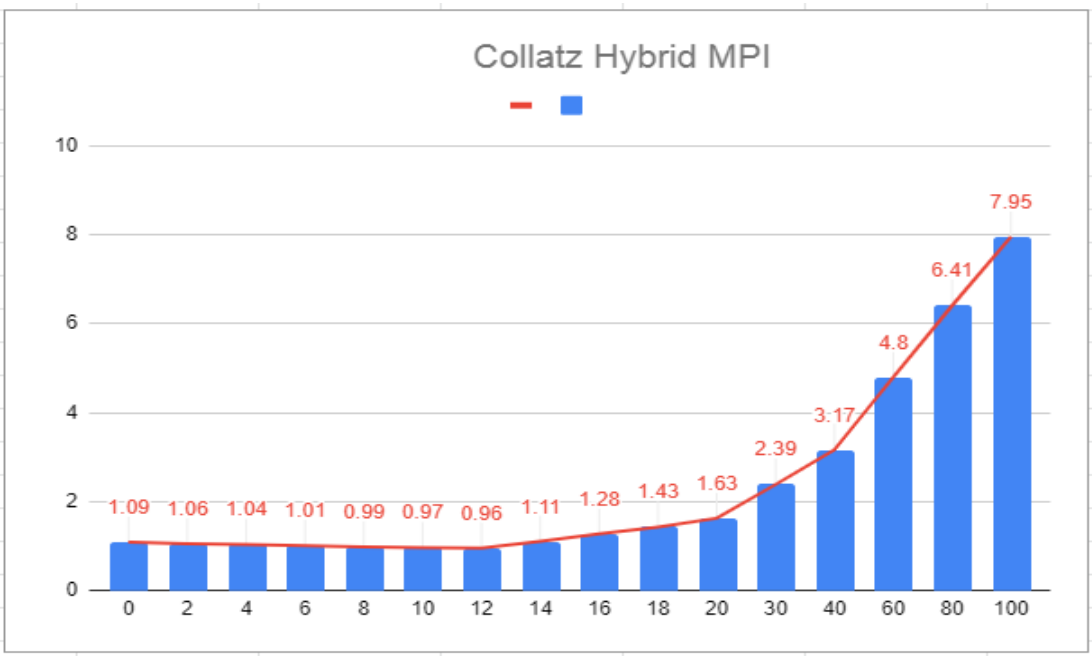

6.2b. 12% usage of the CPU yields the highest performance.

6.2c. The hybrid execution runs roughly 4 times faster compared to using just 1 compute node.

6.1d. Load Imbalance. Compared to cyclic scheduling, block distribution is inflexible and can result in the nodes unevenly utilizing the problem.