CS 475/575 -- Spring Quarter 2022

Project #7B

Autocorrelation using MPI

1. Show the Sums{1] ... Sums[255] vs. shift scatterplot.
2. State what the secret sine-wave period is, i.e., what *change in shift* gets you one complete sine wave?

The secret sine-wave shift is 0-105

1. Show your graph of Performance vs. Number of Processors used.

|  |  |
| --- | --- |
| **Processors** | **Mega-autocorrelations computed per second** |
| 4 | 1326.65 |
| 6 | 1874.27 |
| 8 | 2384.9 |
| 10 | 2882.68 |
| 12 | 3286.86 |
| 14 | 3748.41 |
| 16 | 4212.35 |

1. What patterns are you seeing in the performance graph?

From the above graph, I have observed a linear increase in the performance with an increase in the number of processors.

1. Why do you think the performances work this way?

There is a constant increase in the performance and this might be because the number of processors increases and the data that needs to be computed by a particular processor is reduced which helps reduce the processing time and increases the performance significantly.