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 | Performance |
| 2 | 681.83 |
| 3 | 992.2 |
| 4 | 1293.19 |
| 5 | 1561.17 |
| 6 | 1877.19 |
| 7 | 2104.33 |
| 8 | 2347.26 |
| 9 | 2661.43 |
| 10 | 2313.73 |
| 11 | 3043.11 |
| 12 | 3316.79 |
| 13 | 3514.08 |
| 14 | 3753.08 |
| 15 | 3177.92 |
| 16 | 4213.11 |

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

All the values from code execution are constantly increasing with increase in the processor count.

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

There is a constant increase in the performance due to the processor count increase which implies that data processed by each process decreases and hence the time of computation decrease and thereby increasing the performance.