CS 575

Project 7b

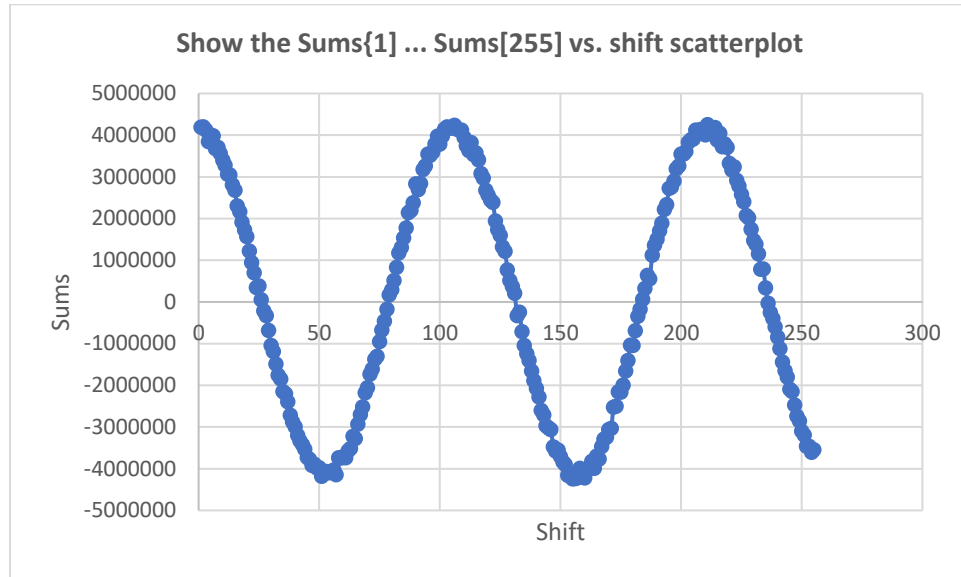**Autocorrelation using MPI**

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1. **Show the Sums{1] ... Sums[255] vs. shift scatterplot.**

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2. **State what the secret sine-wave period is, i.e., what *change in shift* gets you one complete sine wave?**
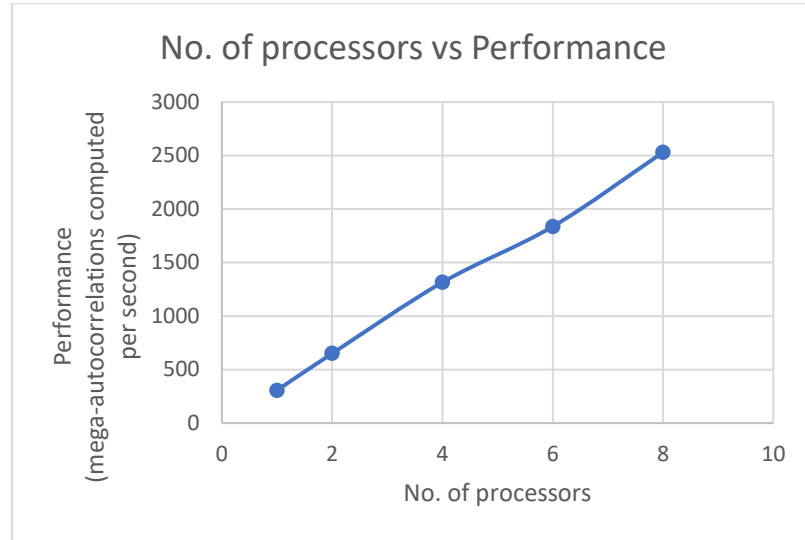
The first peak we can observe is at 106 at 4242734.

The next peak we can observe is at 211 at 4252075.

The total cycles it takes to make one complete sine wave is 211-106 = **105 shifts**

Therefore, we can safely say that it takes 105 shifts to complete 1 sine wave

3. **Show your graph of Performance vs. Number of Processors used.**

4. **What patterns are you seeing in the performance graph?**

I can observe that as the number of processors increase, the performance increases alongside but not at a constant rate as I can see the graph gives a little dip between 4th to 6th processors but again picks up the pace.

5. **Why do you think the performances work this way?**

As the number of processors increase, the job gets evenly distributed among the processors which eventually leads to the increase in the efficiency of work done by processors. The graph also confirms the fact that the increase in the number of processors increases the performance. However, we can see a dip or decline in the performance between the processor 4 & 6, this might be because of the fact that some miscellaneous processes are present in the background which eventually affect our performance.