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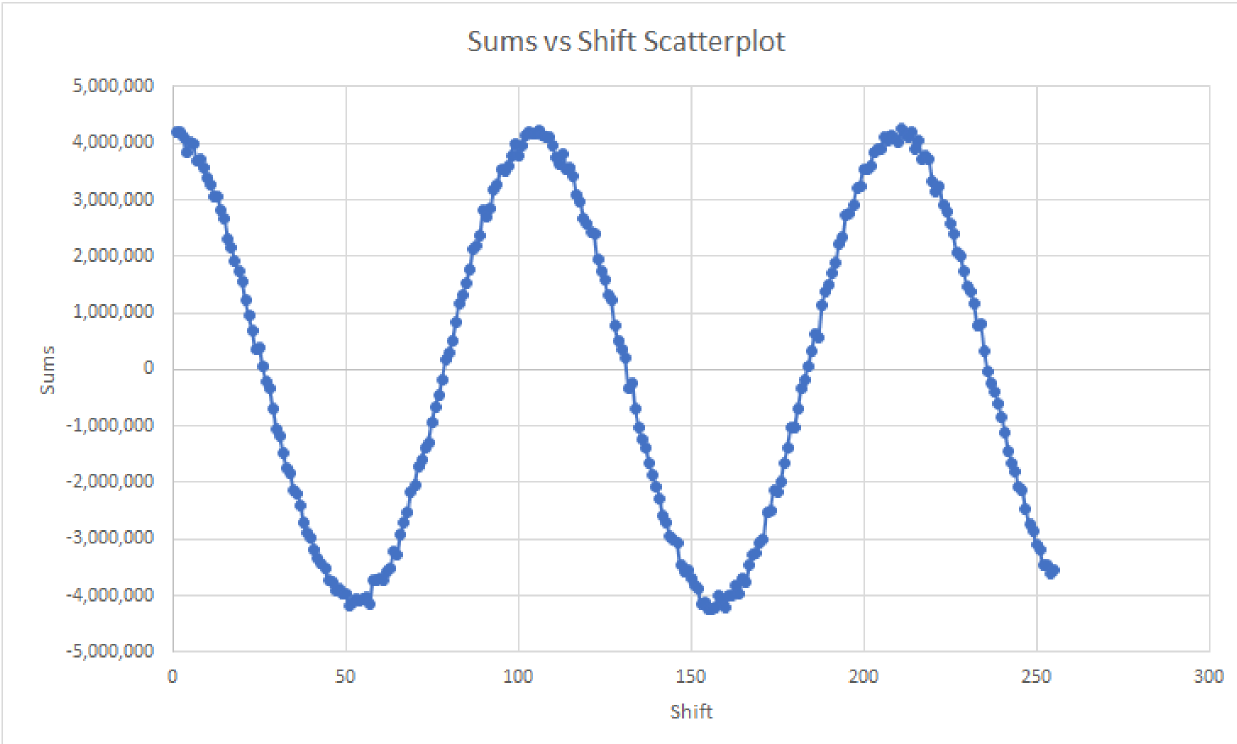
CS 475

Project 7b

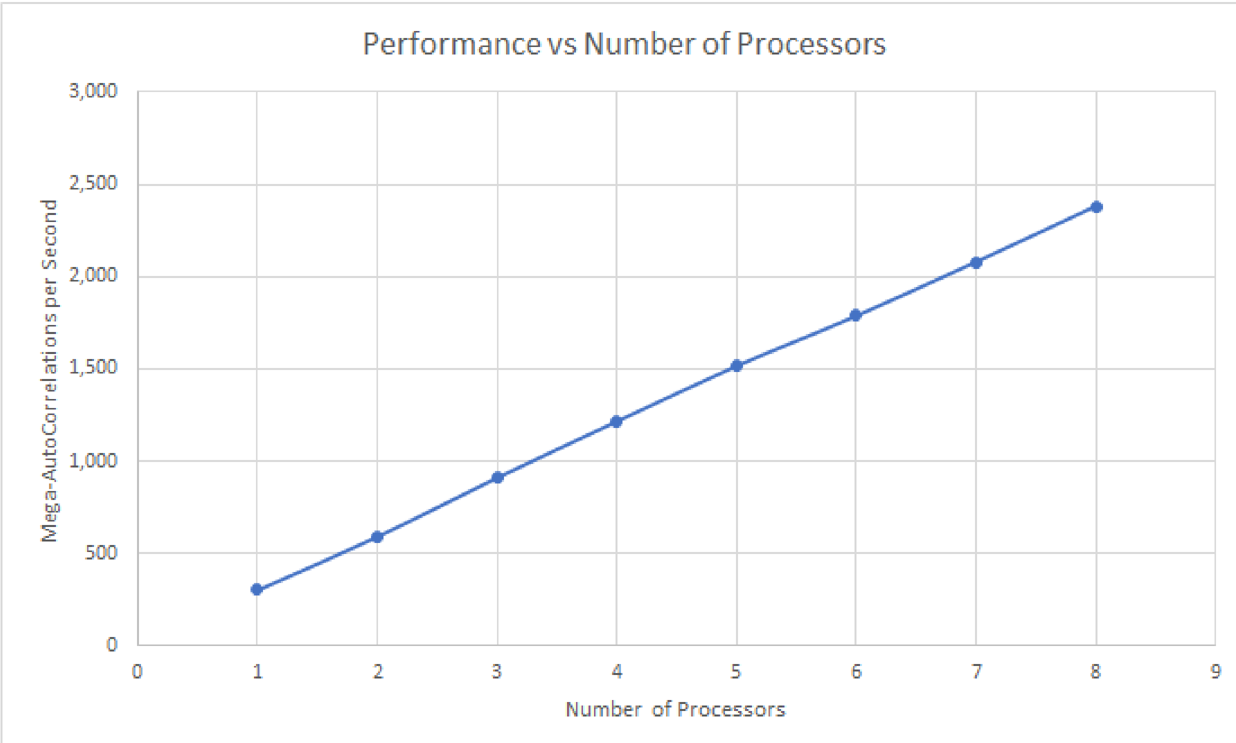
Show the Sums{1] ... Sums[255] vs. shift scatterplot.



State what the secret sine-wave period is, i.e., what *change in shift* gets you one complete sine wave?

The sine wave peaks at 106 and then again at 211, yielding a sine-wave period of 105.

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



Processors	Mega-AutoCorrelations per Second
1	303
2	593
3	912
4	1,217
5	1,516
6	1,788
7	2,080
8	2,382

What patterns are you seeing in the performance graph?

This is a very linear graph, with each additional processor adding about 300 mega-autocorrelations per second.

Why do you think the performances work this way?

The performance is able to continually increase like this due to MPI parallelism utilizing each processor added in a computation with a large dataset. The dataset being used has 8 million signal amplitudes, so each added processor is able to divide that data set up further and perform computations as quickly as it possibly can. If more and more processors are added, eventually the performance will begin to plateau as the data will become too small for each processor to work effectively on, but I suspect that many more processors can be added before that begins to happen.