CS-575 Parallel Programming

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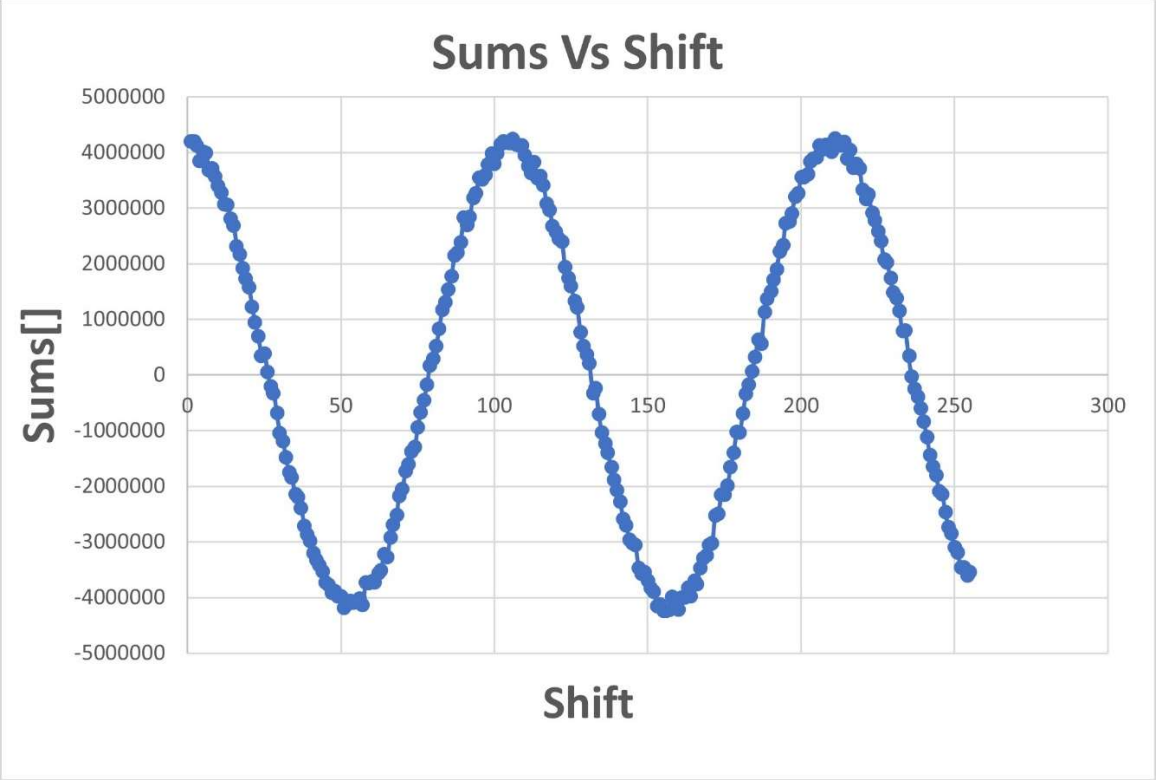
Project Name: #Project-7B

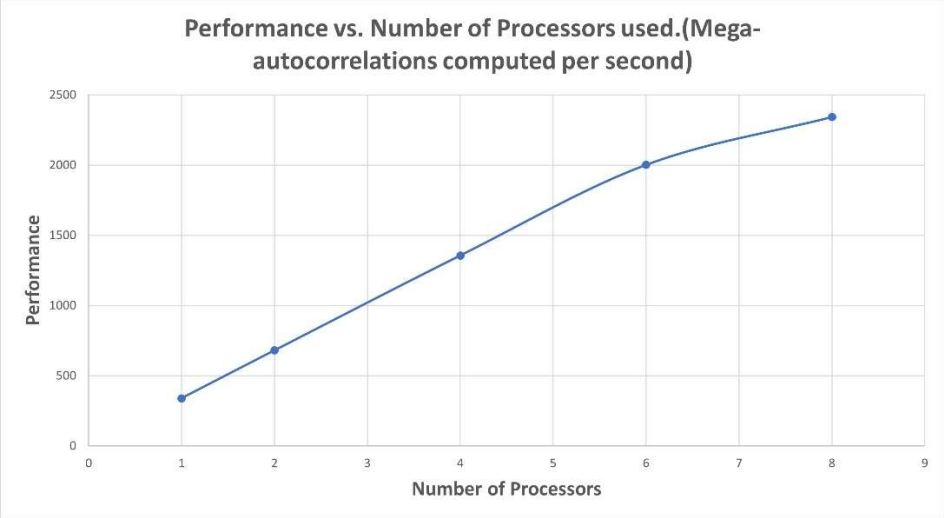
1. **Tell me which machine you ran this on.**
   I ran Project-7B on flip server with the following commands:
   ssh submit-c.hpc.engr.oregonstate.edu
   module load slurm
   module load openmpi
   and then executed with submit.bash by submitting the job.

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



3. **State what the secret sine-wave period is, i.e., what change in shift gets you one complete sine wave?**
   From the above scatterplot, the first peak is at shift 106 with 4242725 and the next one is at 211 with 4252133. With this change of shift of 105 ("211-106") it gives a complete sine wave.

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



5. **What patterns are you seeing in the performance graph?**
   From the above performance graph, I have noticed that as the number of processors increase the performance (mega autocorrelations computed per second) also increases. The performance in the given graph looks a bit linear.

6. **Why do you think the performances work this way?**
   From the given graph, we can say that the dataset which is computed is same, but the number of processors is varied which means same amount of work is divided between different number of processors all the time by the message passing interface (MPI). Hence, by having the same amount of work, as the number of processors increases the processing time will be reduced and the performance will also be improved. This is what shown in the graph where the performance was increasing with the increase in number of processors.