

## SIT315 – Programming Paradigms

### TaskM3.T1P: MPI, OpenMP and OpenCL Matrix Multiplication

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1. Modify your matrix multiplication program to use MPI to distribute work on nodes.

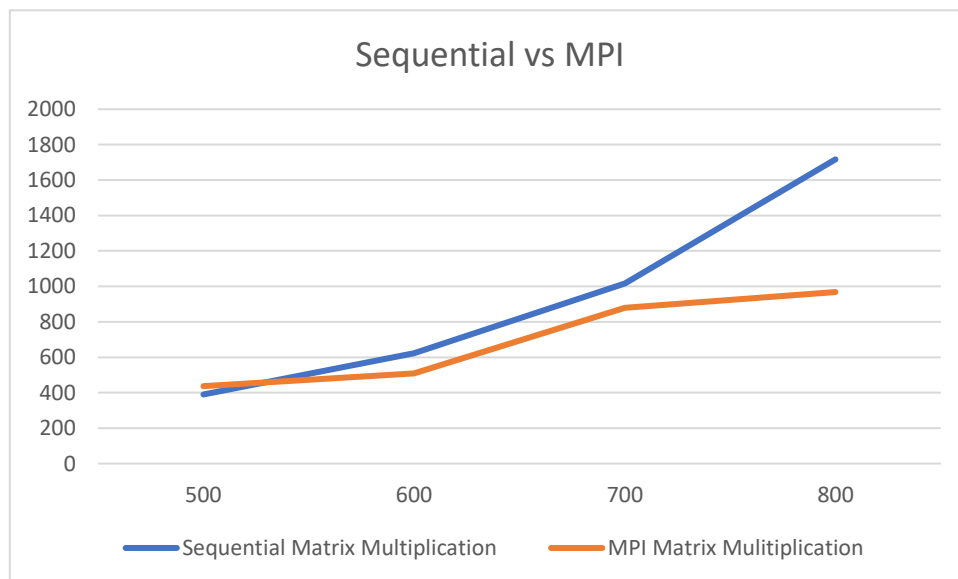
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<https://github.com/gregorymcintyre/ProgrammingParadigms/blob/master/M3.T1P%20-%20MPI%20Matrix%20Multiplication/MPI.cpp>

*SCREENSHOTS OF OPERATION CAN BE FOUND AT*  
<https://github.com/gregorymcintyre/ProgrammingParadigms/tree/master/M3.T1P%20-%20MPI%20Matrix%20Multiplication/Screenshots>

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2. Evaluate the performance of your program vs sequential and multi-threaded solution.



*Figure 1: Sequential and Multi-threaded solution comparison*

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3. Modify your code to use OpenMP on the slave nodes.

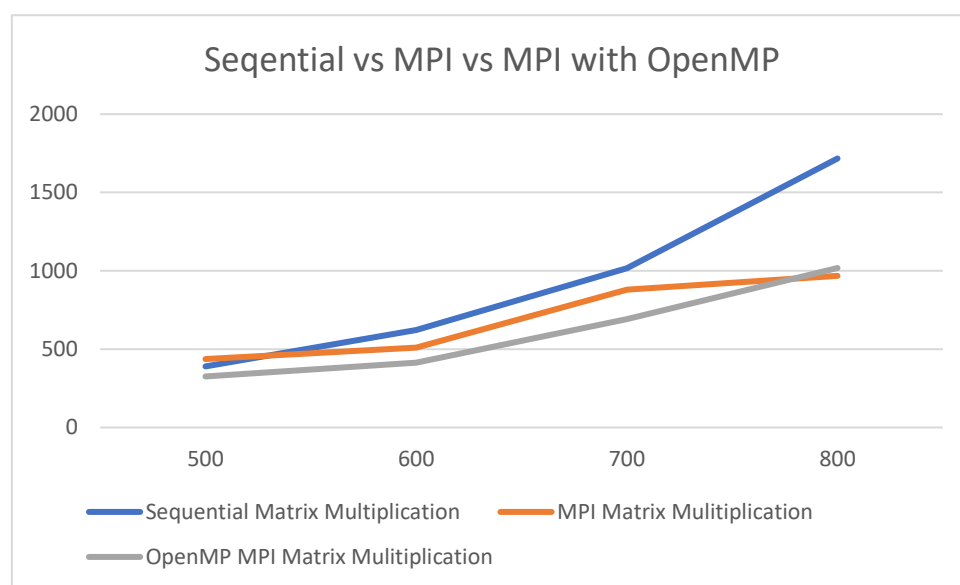
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<https://github.com/gregorymcintyre/ProgrammingParadigms/blob/master/M3.T1P%20-%20MPI%20Matrix%20Multiplication/openmpMPI.cpp>

SCREENSHOTS OF OPERATION CAN BE FOUND AT  
<https://github.com/gregorymcintyre/ProgrammingParadigms/tree/master/M3.T1P%20-%20MPI%20Matrix%20Multiplication/Screenshots>

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4. Evaluate the performance of your program vs the other two.



*Figure 2: sequential and multi-threaded solution  
vs OpenMP comparison*

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5. Modify your code to use OpenCL.

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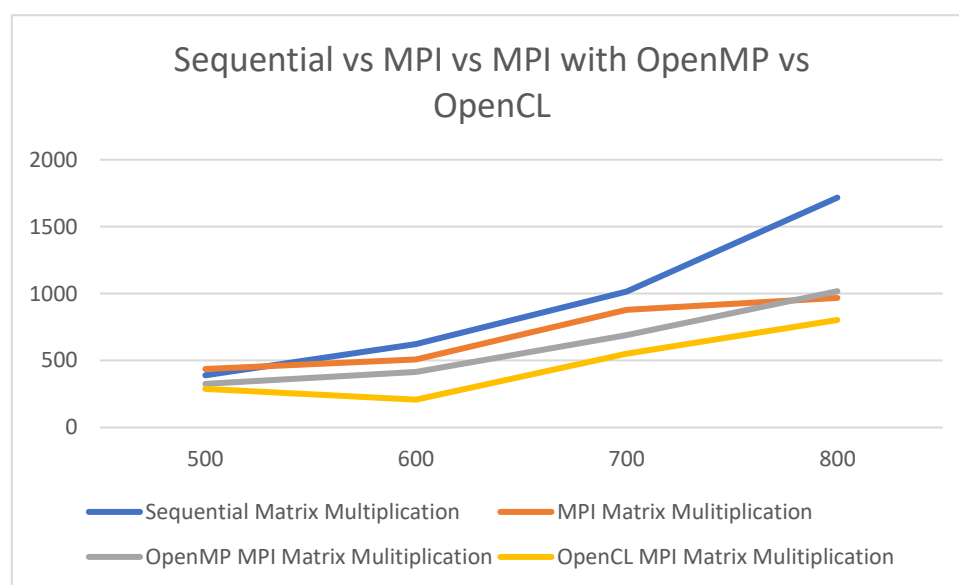
<https://github.com/gregorymcintyre/ProgrammingParadigms/blob/master/M3.T1P%20-%20MPI%20Matrix%20Multiplication/opencLMPI.cpp>

*SCREENSHOTS OF OPERATION CAN BE FOUND AT*

<https://github.com/gregorymcintyre/ProgrammingParadigms/tree/master/M3.T1P%20-%20MPI%20Matrix%20Multiplication/Screenshots>

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6. Evaluate the performance of your programs.



*Figure 3: Sequential Vs MPI vs OpenMP vs OpenCL*

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7. Document your results and present your findings

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This Document.

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8. Submit your task as detailed on the submission details section above to OnTrack.

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Submitted

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