CS575 Project 1

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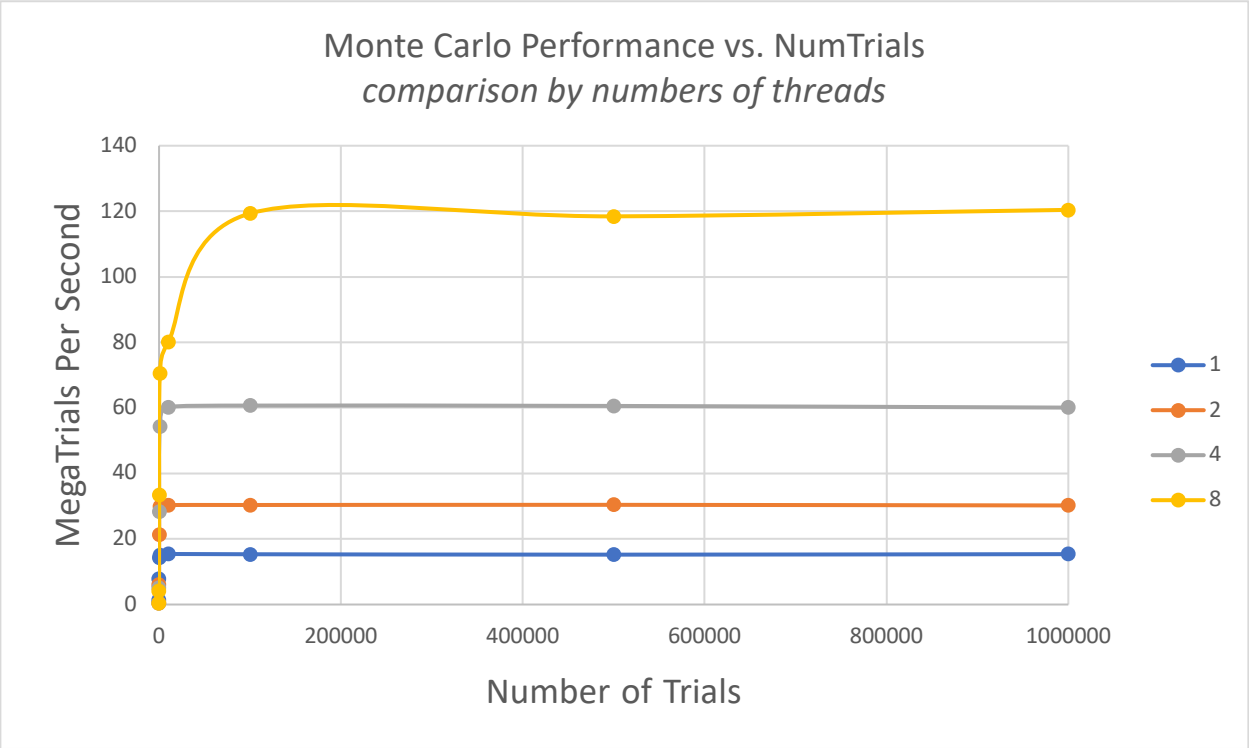
1. Machine Configuration: OSU ENGR

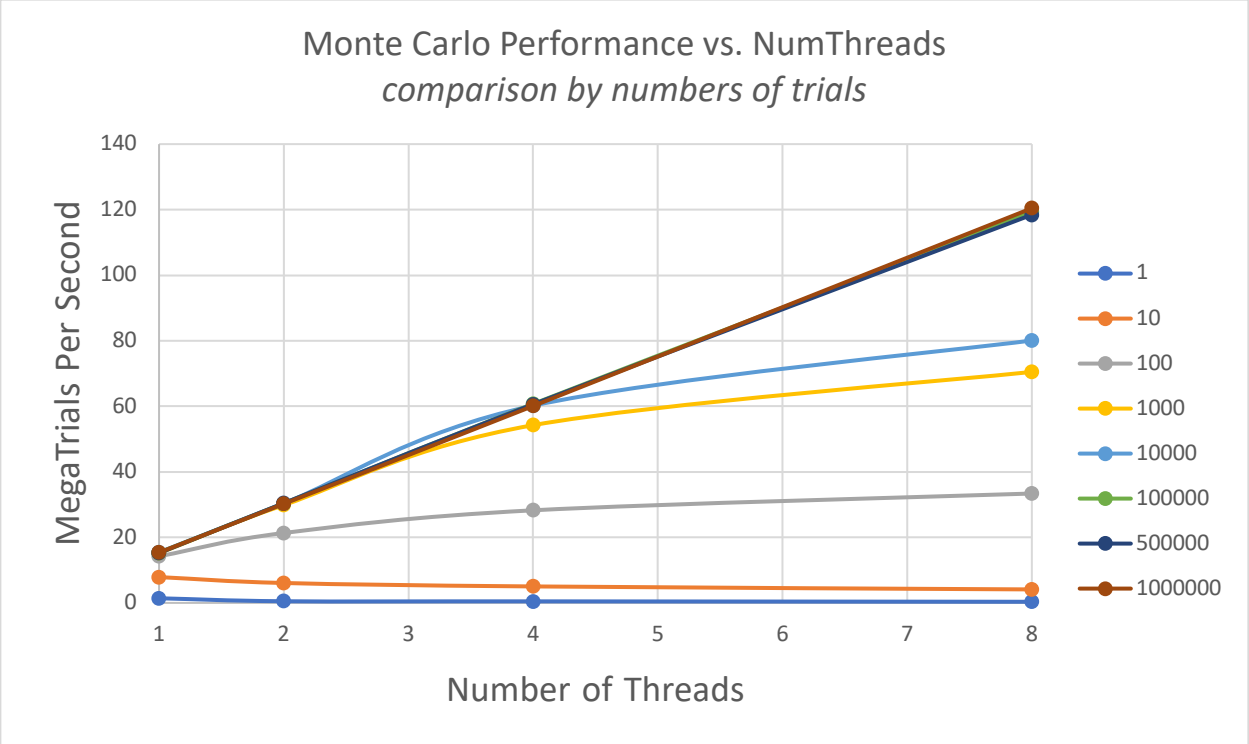
```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                24
On-line CPU(s) list:   0-23
Thread(s) per core:    2
Core(s) per socket:    6
Socket(s):             2
NUMA node(s):          2
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 44
Model name:            Intel(R) Xeon(R) CPU           X5650  @ 2.67GHz
Stepping:              2
CPU MHz:               2659.791
BogoMIPS:              5319.58
Virtualization:        VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              256K
L3 cache:              12288K
NUMA node0 CPU(s):     0,2,4,6,8,10,12,14,16,18,20,22
NUMA node1 CPU(s):     1,3,5,7,9,11,13,15,17,19,21,23
```

2. Results

```
1 threads :        1 trials ; probability =   0.00% ; megatrials/sec =   1.42
1 threads :       10 trials ; probability =  40.00% ; megatrials/sec =   7.88
1 threads :      100 trials ; probability =  27.00% ; megatrials/sec =  14.24
1 threads :     1000 trials ; probability =  27.70% ; megatrials/sec =  15.16
1 threads :    10000 trials ; probability =  29.56% ; megatrials/sec =  15.42
1 threads :   100000 trials ; probability =  29.14% ; megatrials/sec =  15.34
1 threads :   500000 trials ; probability =  29.08% ; megatrials/sec =  15.22
1 threads :  1000000 trials ; probability =  29.10% ; megatrials/sec =  15.37
2 threads :        1 trials ; probability =   0.00% ; megatrials/sec =   0.51
2 threads :       10 trials ; probability =  40.00% ; megatrials/sec =   6.08
2 threads :      100 trials ; probability =  27.00% ; megatrials/sec =  21.33
2 threads :     1000 trials ; probability =  29.10% ; megatrials/sec =  29.85
2 threads :    10000 trials ; probability =  29.18% ; megatrials/sec =  30.36
2 threads :   100000 trials ; probability =  29.07% ; megatrials/sec =  30.37
2 threads :   500000 trials ; probability =  29.19% ; megatrials/sec =  30.42
2 threads :  1000000 trials ; probability =  29.06% ; megatrials/sec =  30.23
4 threads :        1 trials ; probability =   0.00% ; megatrials/sec =   0.48
4 threads :       10 trials ; probability =  20.00% ; megatrials/sec =   5.03
4 threads :      100 trials ; probability =  30.00% ; megatrials/sec =  28.26
4 threads :     1000 trials ; probability =  29.40% ; megatrials/sec =  54.24
4 threads :    10000 trials ; probability =  29.05% ; megatrials/sec =  60.20
4 threads :   100000 trials ; probability =  28.88% ; megatrials/sec =  60.71
4 threads :   500000 trials ; probability =  29.11% ; megatrials/sec =  60.60
4 threads :  1000000 trials ; probability =  29.05% ; megatrials/sec =  60.09
8 threads :        1 trials ; probability =   0.00% ; megatrials/sec =   0.35
8 threads :       10 trials ; probability =  10.00% ; megatrials/sec =   4.12
8 threads :      100 trials ; probability =  28.00% ; megatrials/sec =  33.38
8 threads :     1000 trials ; probability =  28.00% ; megatrials/sec =  70.49
8 threads :    10000 trials ; probability =  28.66% ; megatrials/sec =  80.08
8 threads :   100000 trials ; probability =  28.97% ; megatrials/sec = 119.33
8 threads :   500000 trials ; probability =  29.10% ; megatrials/sec = 118.45
8 threads :  1000000 trials ; probability =  29.04% ; megatrials/sec = 120.43
```

3. Statistics





The probability with 1000000 trails using 1 thread is: 29.1%
The probability with 1000000 trails using 2 threads is: 29.06%
The probability with 1000000 trails using 4 threads is: 29.05%
The probability with 1000000 trails using 8 threads is: 29.04%
The actual probability is 29.06%.

8 threads, 1000000 trials:
Speedup = 120.43 / 15.37 = 7.84
F = 8/7 * (1-1/7.84) = 0.9971