OpenMP Monte Carlo

By Logan Saso
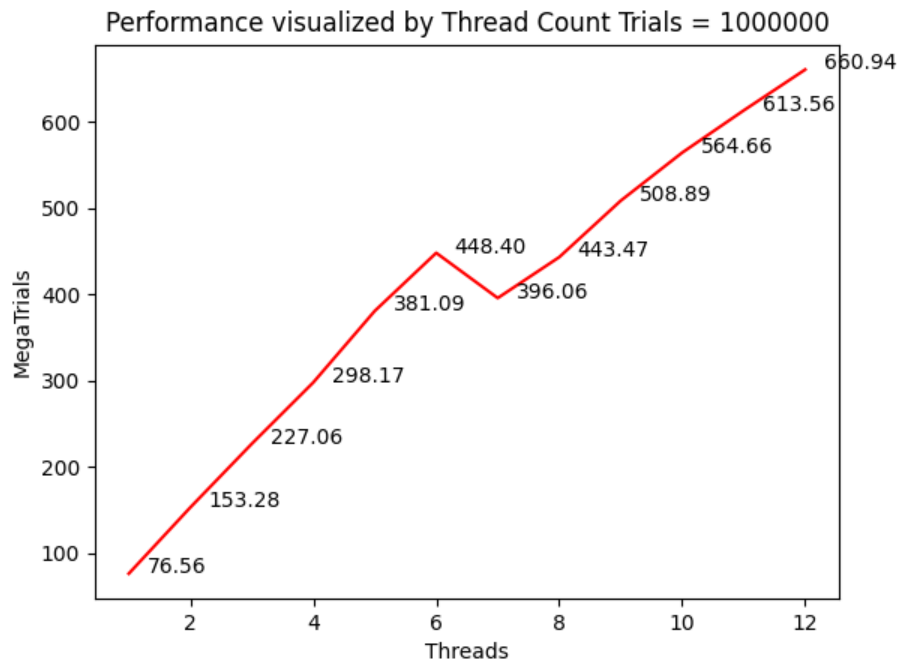
1. Machine Details
   a. Intel I7 8086k
      i. 14 nm process
      ii. 4ghz base (5ghz single-core boost speed)
      iii. 6 cores, 12 threads
   b. 32 GB Corsair Dominator Platinum RAM
      i. Clocked at 2600 MHz
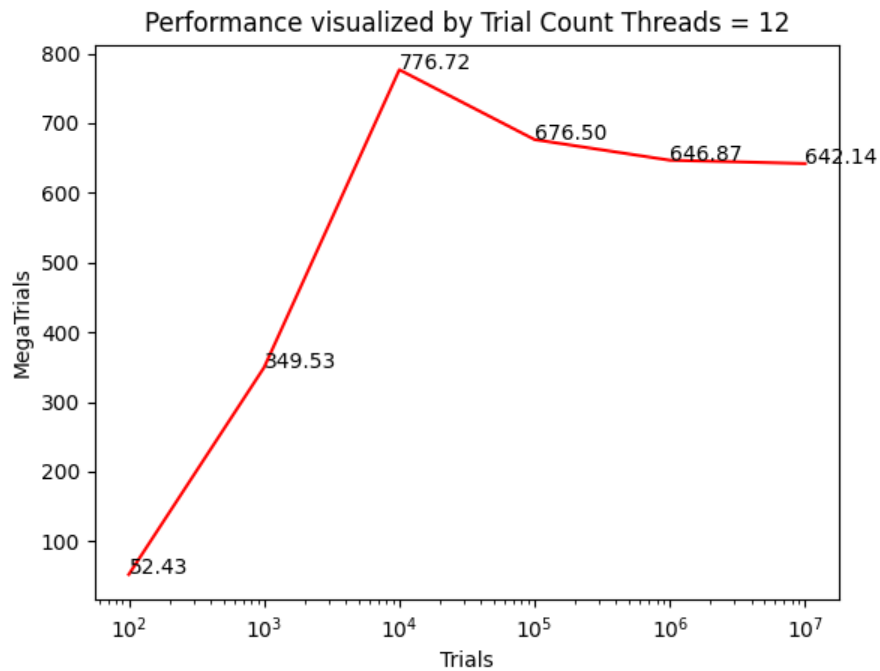2. Table

Estimated Probability	MegaTrials	NumThreads	NumTrials
0.131393	660.936646	12	1000000
0.131423	613.561157	11	1000000
0.131160	564.661255	10	1000000
0.131341	508.893951	9	1000000
0.131404	443.466278	8	1000000
0.131223	396.062714	7	1000000
0.131304	448.396851	6	1000000
0.131089	381.092499	5	1000000
0.130956	298.166199	4	1000000
0.130932	227.062805	3	1000000
0.131296	153.278183	2	1000000
0.131522	76.563545	1	1000000
0.130972	642.135986	12	10000000
0.131296	646.869812	12	1000000
0.129580	676.500671	12	100000
0.130900	776.722961	12	10000
0.143000	349.525330	12	1000
0.100000	52.428799	12	100

3. Given the above table, I'd guess that the true probability is around **0.130972**, as that is the test with the highest number of trials. CPU count should be irrelevant to finding the solution.
4. Graphs

Performance visualized by Thread Count Trials = 1000000

a.

Performance visualized by Trial Count Threads = 12

b.

    i. Note that the trial count is on a log scale here

5. Parallel Fraction Computation
   a. S_12 = 660.936646 / 76.563545 = 8.6325
   b. F_12 = (12/11) * (1-(1/8.6325)) = **0.9645**