

# Parallelization of Simpson's Rule

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# PROBLEM STATEMENT

Develop a parallel implementation of Simpson's rule to achieve significant speedup in computation time

## Why Parallelization?

1. Reduce computation time for complex functions in large datasets.
2. Improved efficiency when dealing with large datasets.

# APPROACH:-

Try to use the multiple cores available for computation and make the computation faster.

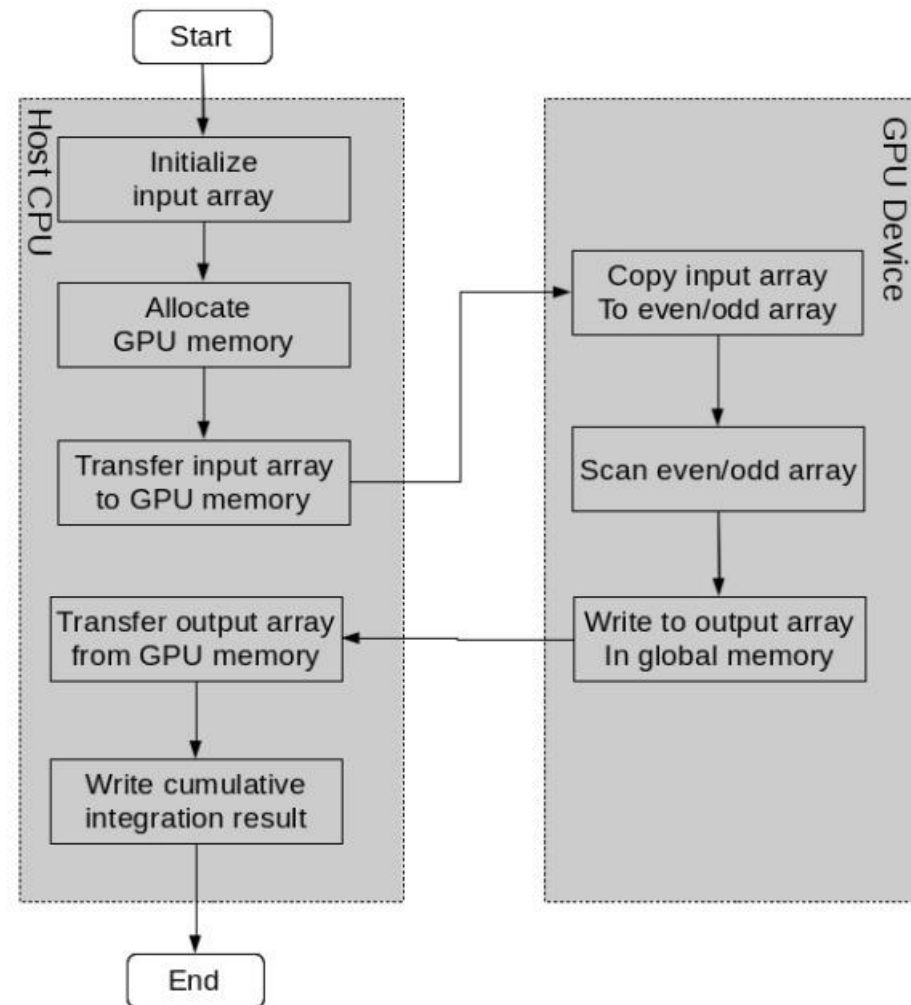


Fig. 2: Proposed algorithm flowchart

# Performance Measure

Number of Processes	Time Taken for Sequential Computaton	Time Taken for GPU Computation	Speed Up
1	0.019216	0.055009	0.0349
100	0.0491	0.0581	0.845
1000	0.2125	0.0943	2.253
10000	1.8896	0.28119	6.72
100000	6.60008	2.19155	3.114
1000000	47.008	20.524	2.29

**Average Speed Up:**

**2.542**

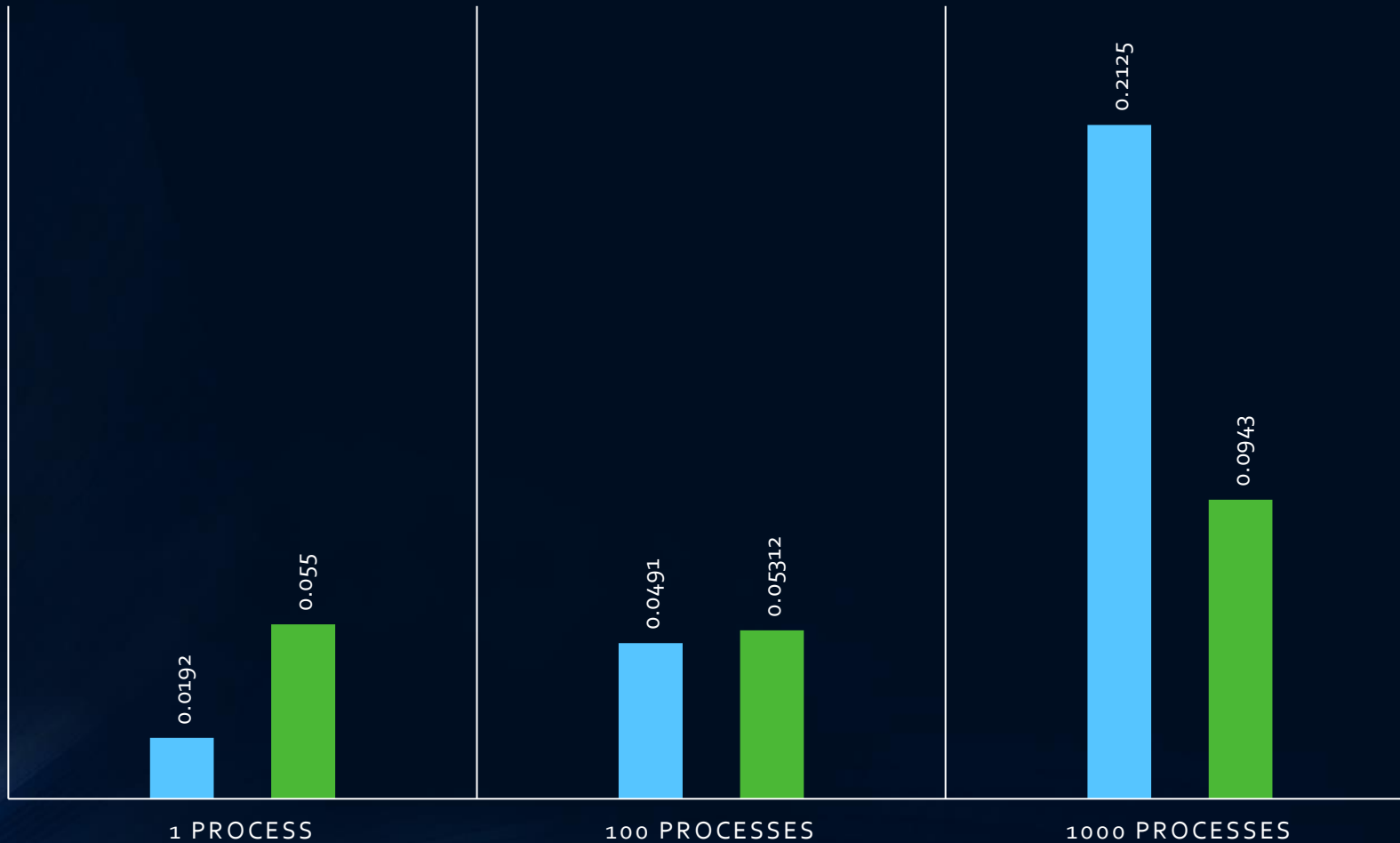
**Parallel Efficiency:**

**42.36%**

# SEQUENTIAL V/S GPU

■ Time Taken For Sequential Computation

■ Time Taken for GPU Computation

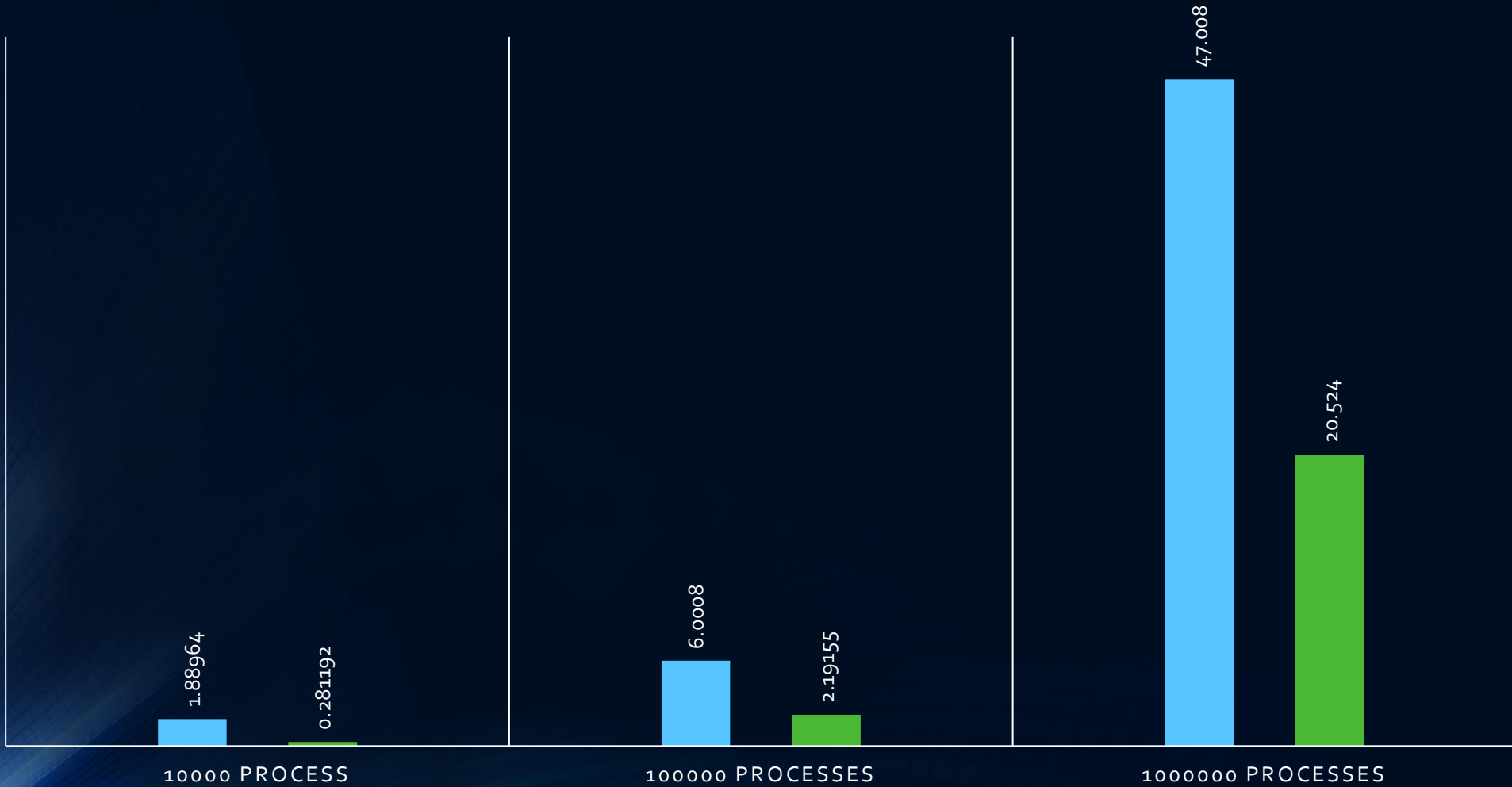




# SEQUENTIAL V/S GPU

■ Time Taken For Sequential Computation

■ Time Taken for GPU Computation



# References:-

AN EFFICIENT PARALLEL ALGORITHM FOR SIMPSON  
CUMULATIVE INTEGRATION ON GPU

I WAYAN ADITYA SWARDIANA\*, TAUFIQ WIRAHMAN† AND RIFKI  
SADIKIN

# Thank You