

Heavy Workload Simulation Report

Date: 2025-12-11 14:21

1. EXECUTIVE SUMMARY

This report analyzes the performance of scheduling strategies under a HEAVY workload regime.

Workload Characteristics:

- Total Tasks: ~10,000 per strategy
- Compute Bias: High (0.6 - 1.0 intensity)
- Size Range: 100 - 5000 units
- Memory Range: 100 - 10000 MB

Key Findings:

- Best Performing Strategy: HYBRID_ML
- Worst Performing Strategy: ROUND_ROBIN
- Speedup: HYBRID_ML was 1.41x faster than ROUND_ROBIN.

2. DETAILED METRICS

Strategy	Makespan(s)	Avg Latency(s)	P95 Latency(s)	P99 Latency(s)	Throughput(T/s)
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round_robin	3863.41	0.1932	0.5367	2.6199	20.71
random	3729.11	0.1865	0.5114	2.4963	21.45
greedy	3518.26	0.1759	0.4745	2.3257	22.74
hybrid_ml	2740.19	0.1370	0.3931	1.7941	29.20
rl_agent	3101.03	0.1551	0.5738	1.8252	25.80

3. COST ANALYSIS

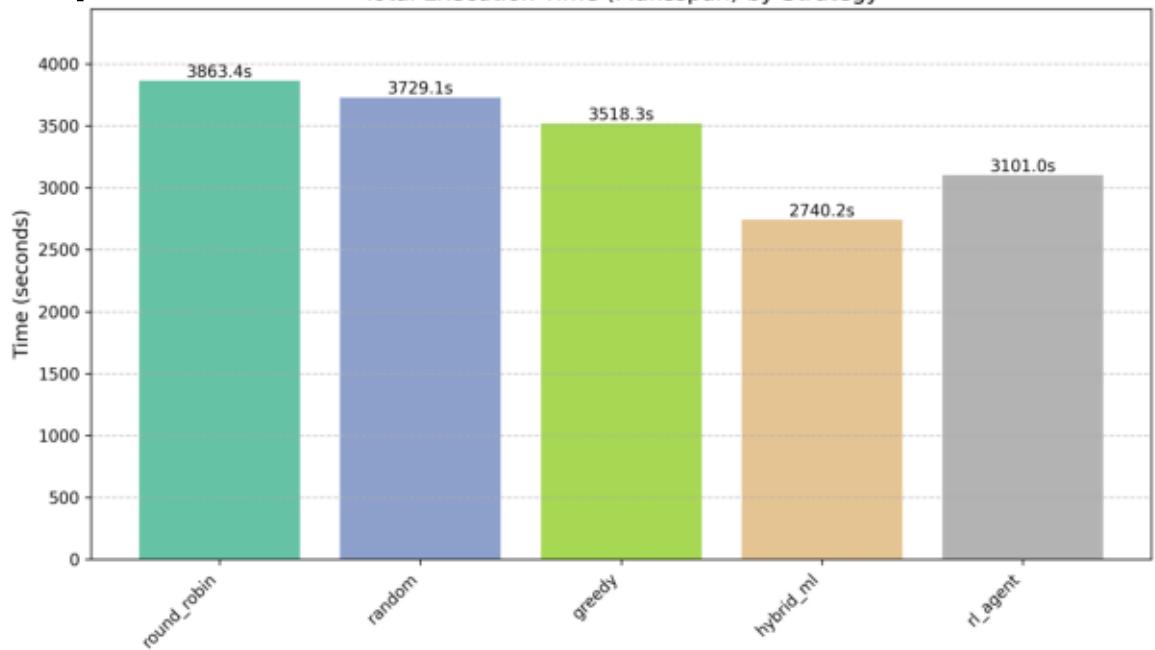
(Abstract Cost units based on compute time and resource usage)

Strategy	Total Cost	Cost Efficiency
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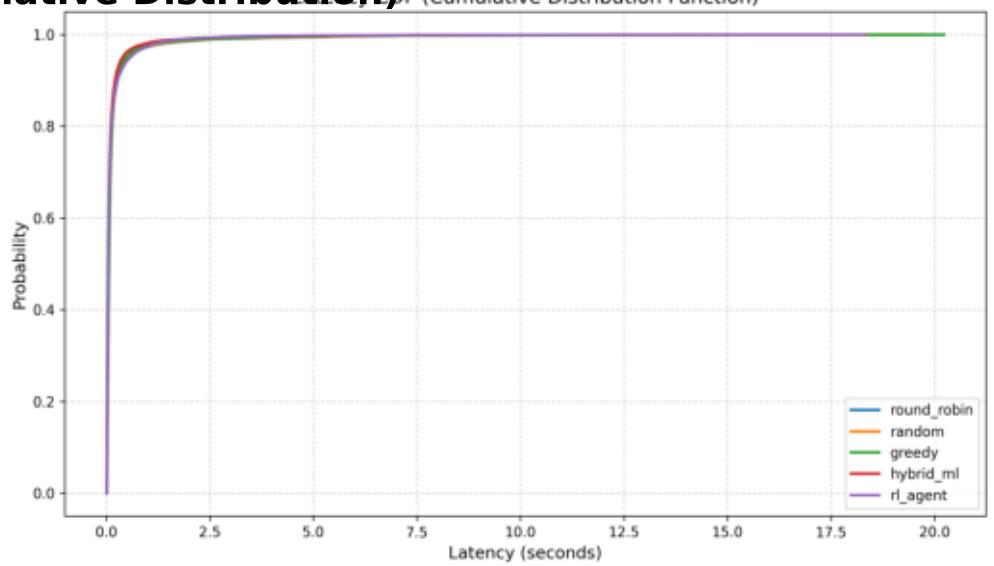
round_robin	0.20	99879.05
random	0.22	90960.49
greedy	0.20	98844.17
hybrid_ml	0.24	83526.30
rl_agent	0.20	99742.62

Makespan Comparison

Total Execution Time (Makespan) by Strategy

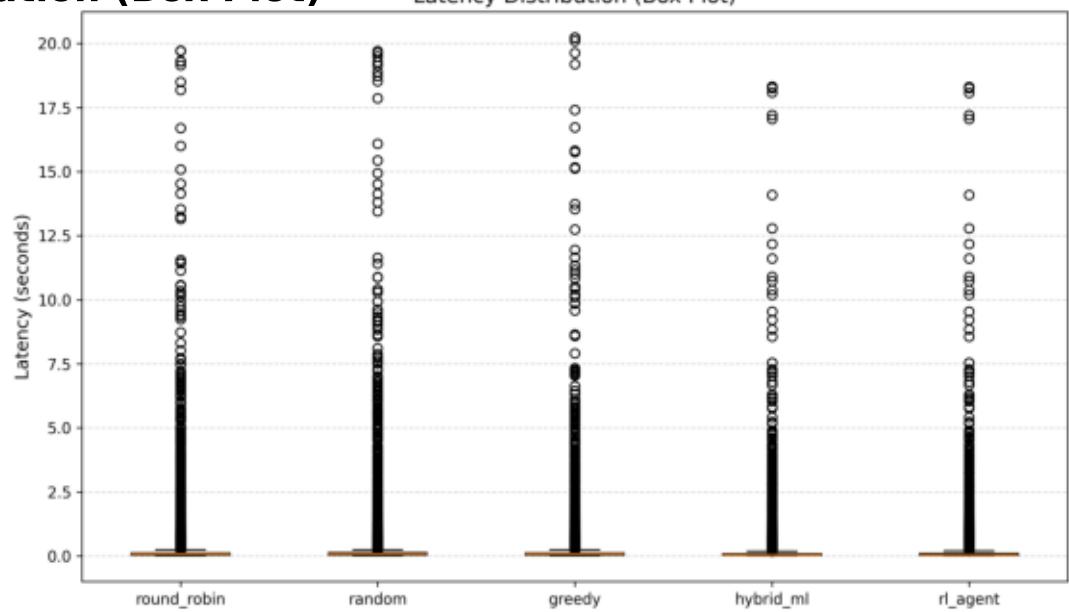


Latency CDF (Cumulative Distribution Function)



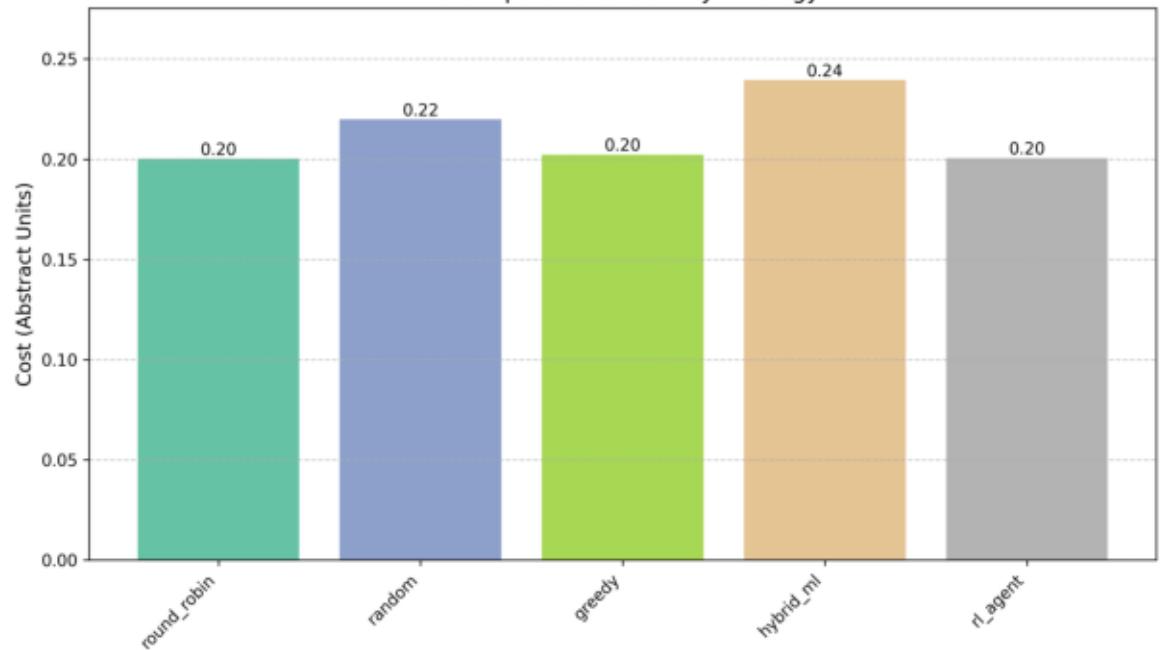
Latency Distribution (Box Plot)

Latency Distribution (Box Plot)



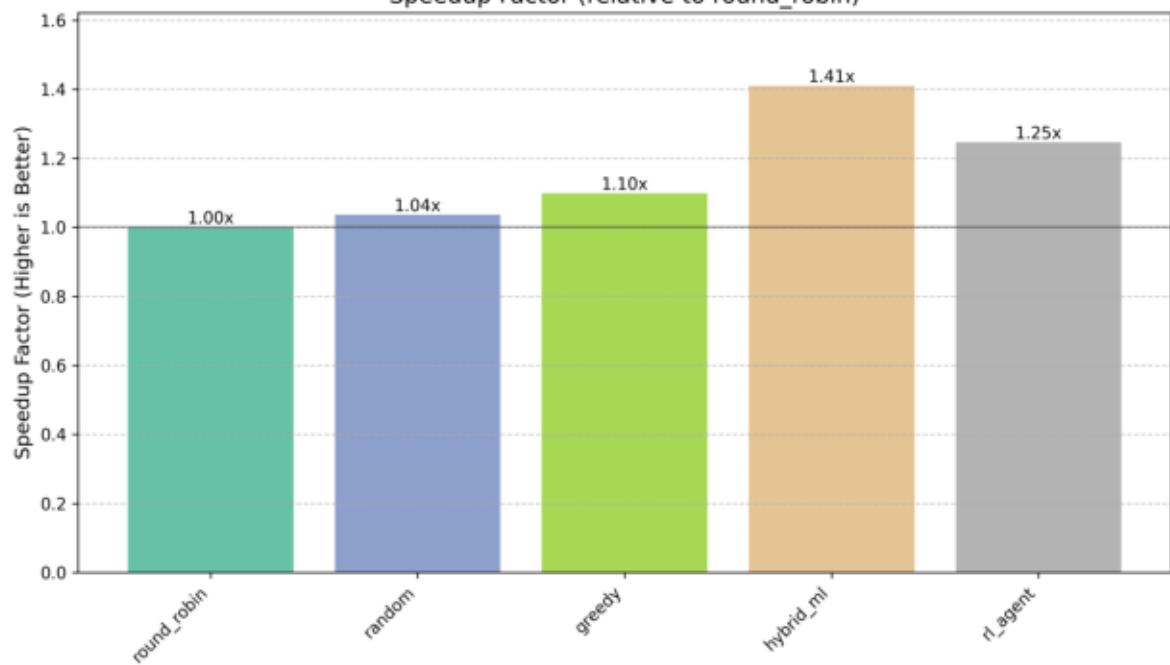
Total Operational Cost

Total Operational Cost by Strategy



Speedup vs Baseline

Speedup Factor (relative to round_robin)



Workload Characteristics

