FOR SYNTHETIC DATA

⚠️ No dataset found. Using synthetic data instead.

🧪 Using synthetic data for MDP (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

MDP: MSE = 0.0008

🧪 Using synthetic data for Q-Learning (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Q-Learning: MSE = 0.0000

🧪 Using synthetic data for Bellman Optimality (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Bellman Optimality: MSE = 2421.0671

🧪 Using synthetic data for Temporal Difference (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Temporal Difference: MSE = 2368.2441

🧪 Using synthetic data for Policy Gradient (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Policy Gradient: MSE = 2377.9668

🧪 Using synthetic data for CTR (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

CTR: MSE = 2423.7871

🧪 Using synthetic data for PageRank (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

PageRank: MSE = 2176.7075

🧪 Using synthetic data for DCG (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

DCG: MSE = 2447.2241

🧪 Using synthetic data for NDCG (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

NDCG: MSE = 2428.0720

🧪 Using synthetic data for Cosine Similarity (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Cosine Similarity: MSE = 2591.4475

🧪 Using synthetic data for TF-IDF (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

TF-IDF: MSE = 2392.3237

🧪 Using synthetic data for RankBrain (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

RankBrain: MSE = 2365.1516

🧪 Using synthetic data for Softmax Keyword Selection (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Softmax Keyword Selection: MSE = 2415.0090

🧪 Using synthetic data for Multi-Armed Bandit (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 2ms/step

Multi-Armed Bandit: MSE = 2305.8811

🧪 Using synthetic data for Deep Q-Learning (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Deep Q-Learning: MSE = 2292.4136

🧪 Using synthetic data for Logistic Regression (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Logistic Regression: MSE = 2379.1013

🧪 Using synthetic data for F-Score (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

F-Score: MSE = 2483.9343

🧪 Using synthetic data for Keyword Probability (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Keyword Probability: MSE = 2314.9336

🧪 Using synthetic data for Reinforcement Learning Loss (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 2ms/step

Reinforcement Learning Loss: MSE = 2143.7041

🧪 Using synthetic data for Hybrid Model 1 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 1: MSE = 2426.4124

🧪 Using synthetic data for Hybrid Model 2 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 2ms/step

Hybrid Model 2: MSE = 2441.5227

🧪 Using synthetic data for Hybrid Model 3 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 3: MSE = 2344.0645

🧪 Using synthetic data for Hybrid Model 4 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 4: MSE = 2344.2725

🧪 Using synthetic data for Hybrid Model 5 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 5: MSE = 2539.6528

🧪 Using synthetic data for Hybrid Model 6 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 6: MSE = 2360.7505

🧪 Using synthetic data for Hybrid Model 7 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 2ms/step

Hybrid Model 7: MSE = 2395.6497

🧪 Using synthetic data for Hybrid Model 8 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 8: MSE = 2507.5005

🧪 Using synthetic data for Hybrid Model 9 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 9: MSE = 2438.0056

🧪 Using synthetic data for Hybrid Model 10 (20000 samples)

125/125 ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ **0s** 1ms/step

Hybrid Model 10: MSE = 2374.9016

🏆 Best Formula: Q-Learning with MSE = 0.0000