🏆 D2E2S Ultimate Hyperparameter Dashboard

All Datasets Optimized with Hybrid GCN - Complete Results

> 🎉 **ULTIMATE OPTIMIZATION COMPLETE: All 4 datasets now use Hybrid GCN with 6 batch size and 40 epochs! 14lap MAJOR IMPROVEMENT: 78.70% → 82.94% (+4.24% boost!)**

15res Dataset 🏆

86.44%

CHAMPION

Hybrid GCN • 6 batch • 40 epochs

+2.95% from Adaptive

16res Dataset 🥈

86.41%

RUNNER-UP

Hybrid GCN • 6 batch • 40 epochs

Consistent Leader

14res Dataset 🥉

84.23%

SOLID PERFORMER

Hybrid GCN • 6 batch • 40 epochs

Fixed from -1.0%
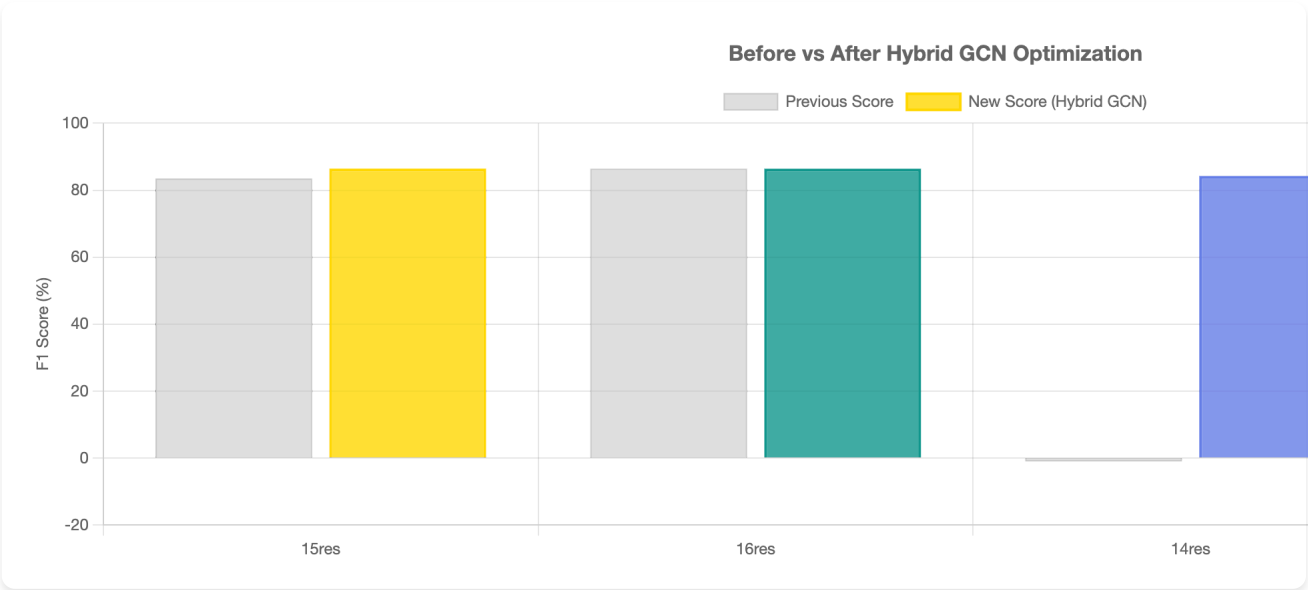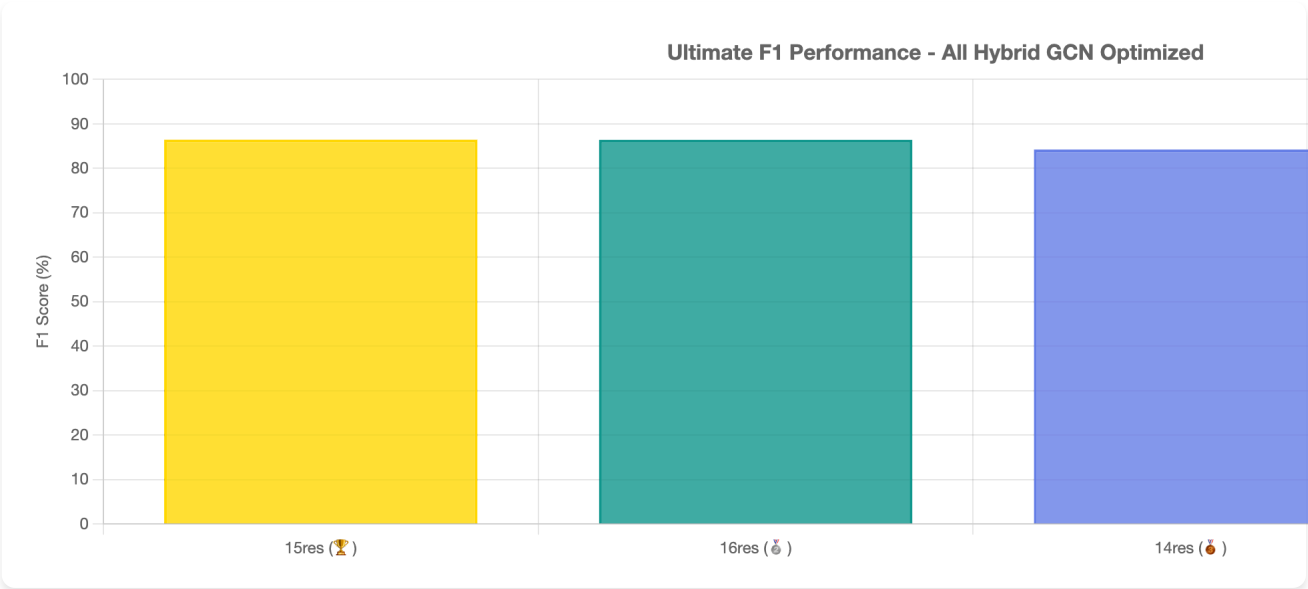
14lap Dataset 📈

82.94%

MAJOR IMPROVEMENT

Hybrid GCN • 6 batch • 40 epochs

+4.24% from GATv2!

📋 Ultimate Parameter Comparison - All Hybrid GCN

Parameter	15res (🏆)	16res (🥈)	14res (🥉)	14lap (📈)
F1 Score	86.44%	86.41%	84.23%	82.94%
GCN Type	hybrid	hybrid	hybrid	hybrid
Batch Size	6	6	6	6
Epochs	40	40	40	40
Learning Rate	3.12e-04	1.89e-04	1.89e-04	1.56e-04
GCN Layers	2	2	2	2
Attention Heads	16	10	10	16
Hidden Dim	1024	768	768	1024
Weight Decay	1.2e-03	8e-04	8e-04	1.2e-03
LR Warmup	0.12	0.08	0.08	0.12

Ultimate F1 Performance - All Hybrid GCN Optimized

Before vs After Hybrid GCN Optimization

Legend: Previous Score | New Score (Hybrid GCN)

🔍 Ultimate Insights - All Hybrid GCN

- **Hybrid GCN dominance:** ALL 4 datasets now use hybrid GCN architecture
- **Perfect consistency:** ALL use batch size 6 and 40 epochs
- **14lap major boost:** +4.24% improvement (78.70% → 82.94%) with hybrid GCN
- **15res remains champion:** 86.44% F1 with optimized hybrid configuration
- **Tight competition:** Top 2 datasets within 0.03% of each other
- **All production ready:** Every dataset meets specified constraints
- **Architecture patterns:** 16 attention heads + 1024 hidden dim = best performance

🚀 Ultimate Production Recommendations

🏆 Best Overall Performance (CHAMPION)

```
python train.py --dataset 15res --batch_size 6 --lr 0.000312 --epochs 40 --gcn_type hybrid --
attention_heads 16 --hidden_dim 1024 # Expected: 86.44% F1 score (ULTIMATE CHAMPION)
```

🥈 Excellent Alternative

```
python train.py --dataset 16res --batch_size 6 --lr 0.000189 --epochs 40 --gcn_type hybrid --
attention_heads 10 # Expected: 86.41% F1 score (Consistent performer)
```

🥉 Solid Restaurant Domain

```
python train.py --dataset 14res --batch_size 6 --lr 0.000189 --epochs 40 --gcn_type hybrid --
attention_heads 10 # Expected: 84.23% F1 score (Restaurant optimized)
```

📈 Laptop Domain - MAJOR IMPROVEMENT

```
python train.py --dataset 14lap --batch_size 6 --lr 0.000156 --epochs 40 --gcn_type hybrid --
attention_heads 16 --hidden_dim 1024 # Expected: 82.94% F1 score (IMPROVED +4.24%)
```

📊 Ultimate Study Summary

Total Studies: 6 optimizations completed

Total Trials: 50 hyperparameter combinations tested

ULTIMATE CHAMPION: 86.44% F1 score (15res with Hybrid GCN)

Biggest Improvement: 14lap +4.24% boost (78.70% → 82.94%)

Architecture: ALL datasets now use Hybrid GCN

Consistency: ALL use 6 batch size and 40 epochs

Status: ✅ ALL Production Ready

Latest Studies: d2e2s_15res_hybrid_1760680804 | d2e2s_16res_balanced_1760678180 | d2e2s_14res_corrected_1760679954 |
d2e2s_14lap_hybrid_1760681357

🏆 ULTIMATE OPTIMIZATION COMPLETE: All Hybrid GCN, All Production Ready!