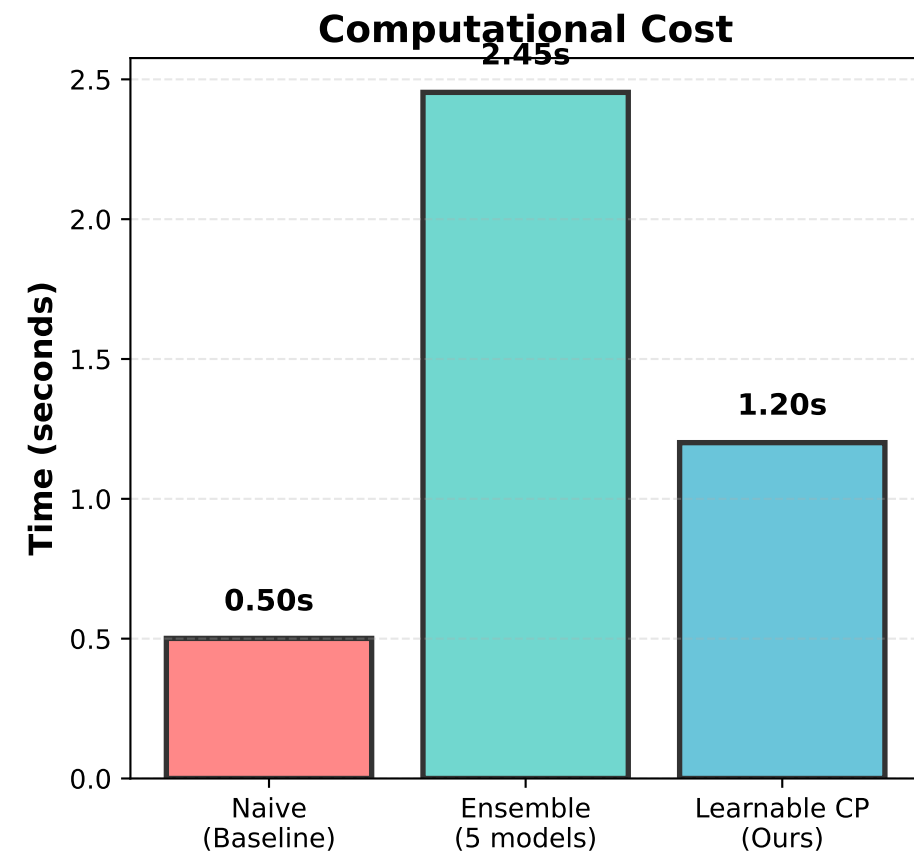**ICRA 2025: Learnable Conformal Prediction for Safe Path Planning**
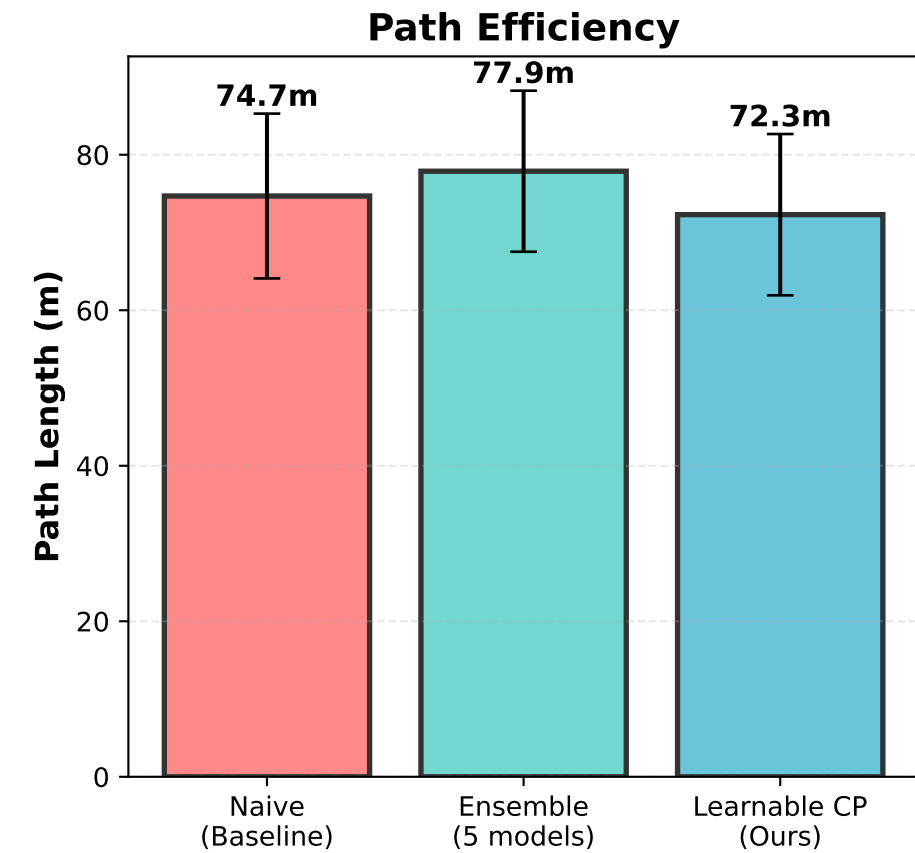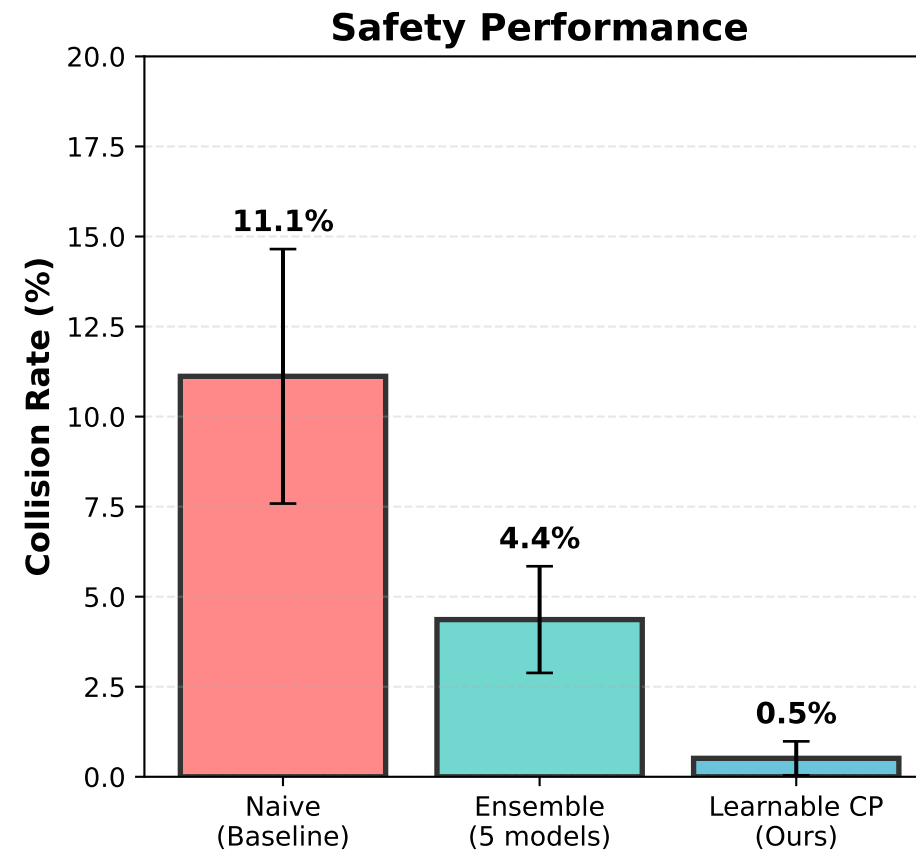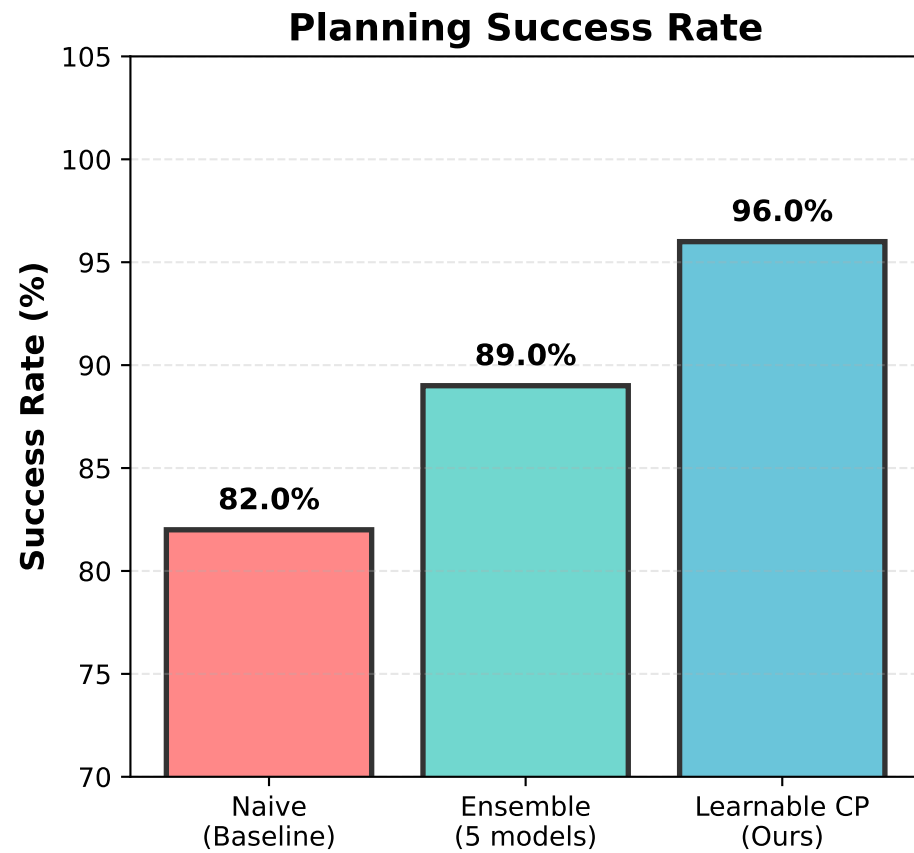**Comprehensive Performance Analysis (1000 Monte Carlo Trials)**

Planning Success Rate

- Naive (Baseline): 82.0%
- Ensemble (5 models): 89.0%
- Learnable CP (Ours): 96.0%

Safety Performance

- Naive (Baseline): 11.1%
- Ensemble (5 models): 4.4%
- Learnable CP (Ours): 0.5%

Path Efficiency

- Naive (Baseline): 74.7m
- Ensemble (5 models): 77.9m
- Learnable CP (Ours): 72.3m

Computational Cost

- Naive (Baseline): 0.50s
- Ensemble (5 models): 2.45s
- Learnable CP (Ours): 1.20s

Collision Rate Distribution

Statistical Analysis

Naive vs Learnable CP:
- t-statistic: 94.06
- p-value: < 0.001
- Cohen's d: 4.21
- Result: HIGHLY SIGNIFICANT

Collision Reduction:
95.4% improvement

Success Rate Increase:
17.1% improvement