

Appendix

Boxplots for numerical simulations in Section 4.1

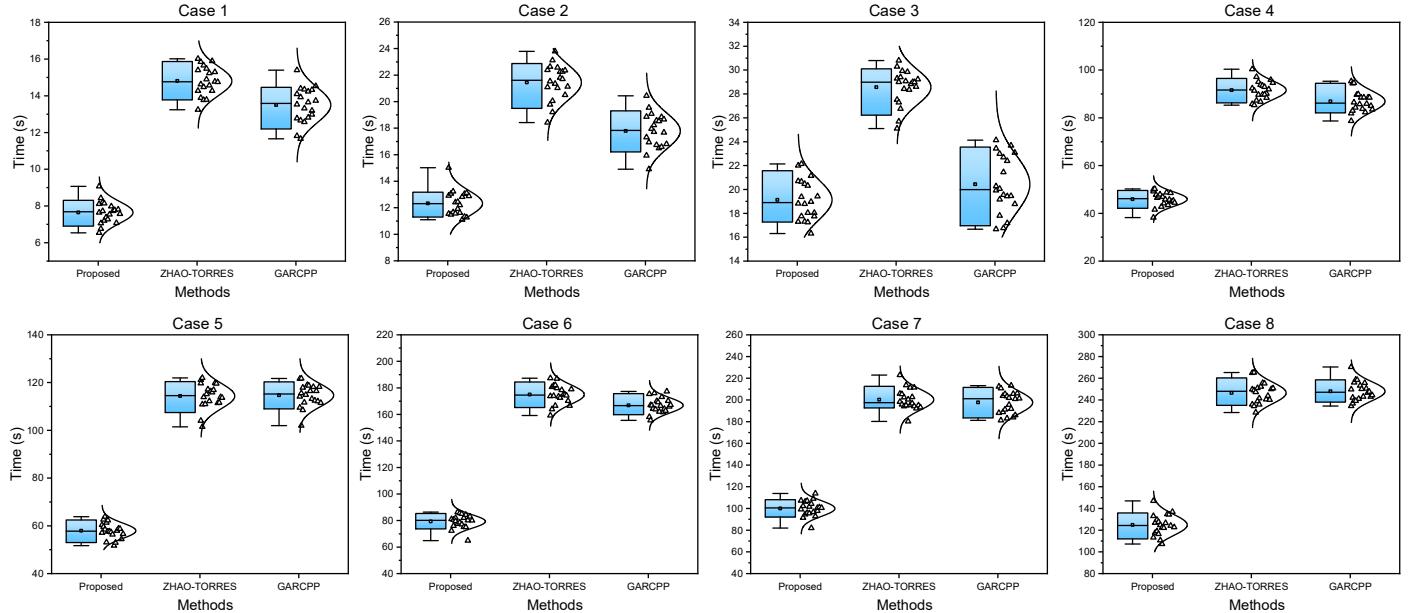


Fig. 1. Boxplots for computational time

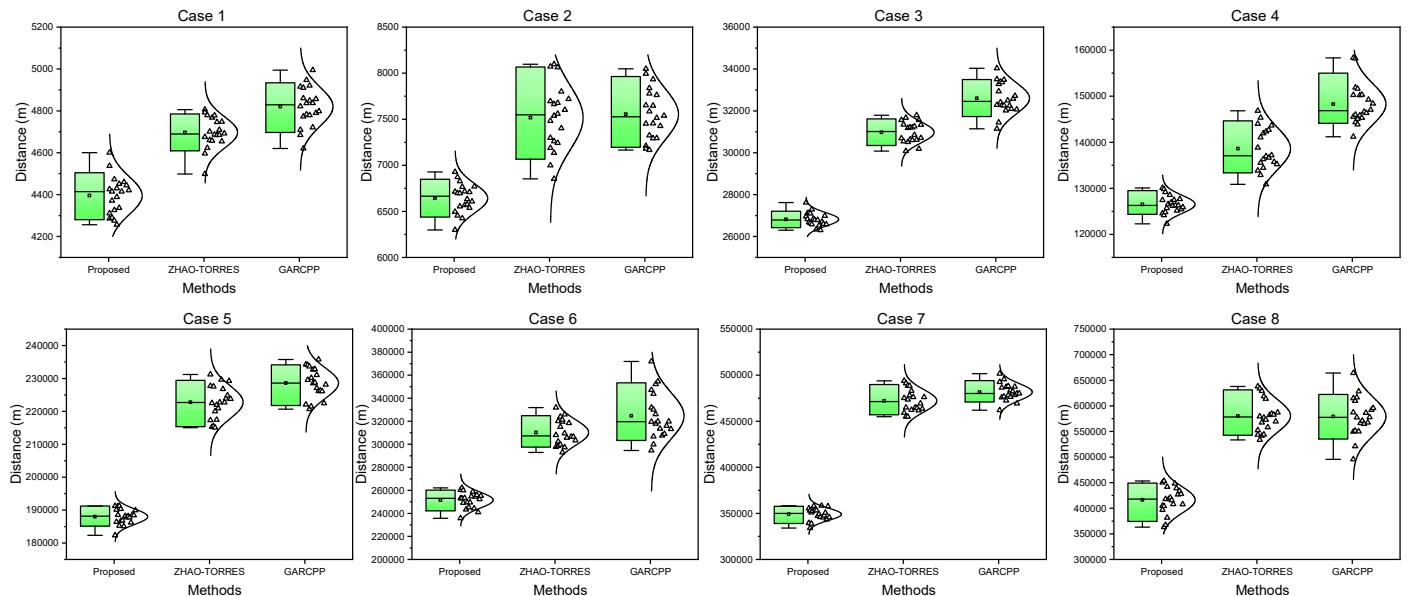


Fig. 2. Boxplots for path length

Fig. 1 and Fig. 2 present the statistical data distribution of computation time and path length for three methods across eight numerical simulation cases. The first box plot compares the computation time performance of three methods across eight cases. Overall, proposed method consistently shows lower medians and smaller variability, indicating stable performance. ZHAO-TORRES has higher medians and greater variability in several cases, suggesting less stable performance across different scenarios. GARCPP's medians and variability lie between those of proposed method and ZHAO-TORRES, showing relatively balanced but somewhat inconsistent performance.

The second box plots illustrate the distribution of final path lengths for three methods across eight coverage path planning cases. The proposed method consistently achieves the shortest path lengths with lower

variability in all cases. The ZHAO-TORRES method shows moderate performance with higher variability, while the GARC^PP method often results in the longest path lengths and the highest variability. This indicates that the proposed method is the most efficient and stable across different scenarios.

Visualized results for large scale cases

