Investigation and Application of Traveling Salesman Algorithms in Urban Route Planning

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This research explores the application of Traveling Salesman Problem (TSP) algorithms in the context of urban route planning. The goal was to assess and compare the performance of several well-known algorithmic approaches [1, 2, 5], focusing on their suitability for realistic urban environments. The study emphasizes factors such as execution time, solution quality, scalability, and robustness.

Among the evaluated algorithms, particular attention was given to bitonic variants [5], which showed promising results in terms of efficiency and practical applicability. These algorithms provided fast and near-optimal solutions while adapting well to different types of urban layouts. The flexibility of certain variants under varying conditions suggests strong potential for integration into real-world systems.

The developed solution is capable of accounting for additional constraints such as average visiting times [3], which adds practical value in everyday urban scenarios. Testing was conducted using real-world map data [4], enabling reliable comparisons and meaningful conclusions.

Overall, the research offers insights into the strengths and trade-offs of different optimization strategies for urban routing tasks, and provides a foundation for future developments in intelligent transportation systems and context-aware navigation tools.

References

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