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TE Comps A

Postlab - 10

Q1) How to overcome combinatorial explosion in TSP?

→ a) Heuristic Algorithm - Utilize algorithms such as Nearest neighbours, generic algorithms, to find approximate solutions quickly without exhaustively exploring all possible combinations

b) Local Search Techniques - Implement local search techniques such as 2-opt or 3-opt to iteratively improve a given solution by making small adjustments

c) Branch and Bound - Apply techniques like Branch & Bound to prune branches of the search tree that cannot lead to an optimal solution, reducing the search space.

d) Problem Relaxation: Relax the problem constraints or divide the problem into smaller subproblems.

Q2) What is learning from TSP?

→ a) ~~TSP~~ Algorithm Design - Understanding how to design and analyze algorithms for NP-hard problems, considering factors like time complexity, approximation guarantees, and scalability.

b) Heuristic Methods: Learning about heuristic methods for finding approximate solutions efficiently, which can lead to generalized to solve other optimization problems in real world scenarios

c) Problem Modeling: Gaining experience in modeling real world problems as optimization tasks, identifying constraints, objectives and suitable solution representations.

d) Optimization Techniques: Exploring optimization techniques such as local search, metaheuristics and mathematical programming formulations that can be adapted to tackle different combitorial optimization challenges.