BUS TRANSPORTATION

Optimization and Regression *Project*

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Student Transportation

Problem Description:

We have a bus transportation company that owns 3 buses and transports to 12 locations, and we want to minimize the distance between the locations each bus goes to.

Constraints:

1. $\forall i, j, k, l \rightarrow Xi[k] \neq Xj[l]$ (No two busses go to the same location)
2. $\forall Xi | Xi[j] - Xi[k] | \leq 50$ (The distance between locations for each bus must be less than 50 miles)
3. $\forall Xi, Xi[j] \neq Xi[k]$ (No bus will go to the same location twice)
4. $distance(Xi[j]) \leq 150$ (The distance between all the locations must be less than or equal to 150 miles)

Criteria to optimize:

The distance:
Minimize $\sum_i distance(Xi[j])$

Metaheuristic:

Using Basic Local Search to solve TSP:
We'll use basic local search to distribute the busses to the districts depending on where the students live, and which districts are close to each other.