

Santa Sleigh

Problem :

This is a route optimization problem, where trips must be optimized with total distance travelled and with a total payload, as such a weighted distance.

Data provided;

100000 rows of target locations with corresponding weights.

Solution:

Cluster target location with nearest neighbor variant algorithm. (DBSCAN algorithm is used)

After iteratively finding cluster to include most points, trips are calculated by evaluating the cluster centers and conditioning on total weights.

Simple trial and error gave 50 radians are a good representation of cluster distance.

After the cluster have been found, the solution could be as simple as partitioning the trips by the sum of weights of gifts from the cluster center.