

PERFORMANCE EVALUATION REPORT

DATA SOURCE:

<http://archive.ics.uci.edu/ml/datasets/Gas+sensor+array+under+dynamic+gas+mixtures>

DATA SIZE: 50000 INSTANCES AND 17 ATTRIBUTES

LSH

Clusters: 131

Visits: 1

Distance to Nearest Neighbor: 441.733045

Visits: 2

Distance to Nearest Neighbor: 187.103984

Visits: 1

Distance to Nearest Neighbor: 1264.497904

Visits: 1

Distance to Nearest Neighbor: 312.885276

Visits: 2012

Distance to Nearest Neighbor: 194.529232

Visits: 3

Distance to Nearest Neighbor: 205.772130

Visits: 20

Distance to Nearest Neighbor: 200.283571

Visits: 187

Distance to Nearest Neighbor: 41.633709

Visits: 3

Distance to Nearest Neighbor: 38.872650

Visits: 9

Distance to Nearest Neighbor: 39.691378

KDTREE

Points visited: 385

Minimum distance: 78586.623288

Points visited: 385

Minimum distance: 69556.316008

Points visited: 385

Minimum distance: 52995.788562

Points visited: 385

Minimum distance: 45587.736604

Points visited: 385

Minimum distance: 33522.848128

Points visited: 385
Minimum distance: 28848.165179

Points visited: 385
Minimum distance: 24918.042606

Points visited: 385
Minimum distance: 19218.294493

Points visited: 385
Minimum distance: 17035.803064

Points visited: 387
Minimum distance: 13689.796372

KMEANS

Runs longer and doesn't terminate for given data size

DATA SIZE: 5000 INSTANCES AND 17 ATTRIBUTES

LSH

Clusters: 131
Visits: 1
Distance to Nearest Neighbor: 441.733045

Visits: 1
Distance to Nearest Neighbor: 187.103984

Visits: 1
Distance to Nearest Neighbor: 1264.497904

Visits: 1
Distance to Nearest Neighbor: 312.885276

Visits: 2
Distance to Nearest Neighbor: 331.795927

Visits: 2
Distance to Nearest Neighbor: 205.772130

Visits: 4
Distance to Nearest Neighbor: 200.283571

Visits: 2
Distance to Nearest Neighbor: 41.633709

Visits: 3
Distance to Nearest Neighbor: 225.261761

Visits: 7
Distance to Nearest Neighbor: 39.691378

Program ended with exit code: 0

KDTREE

Points visited: 38
Minimum distance: 78606.001414

Points visited: 38
Minimum distance: 69575.479299

Points visited: 38
Minimum distance: 53016.190068

Points visited: 38
Minimum distance: 45609.378206

Points visited: 38
Minimum distance: 33547.619942

Points visited: 38
Minimum distance: 28874.740915

Points visited: 38
Minimum distance: 24946.516806

Points visited: 38
Minimum distance: 19250.467541

Points visited: 38
Minimum distance: 17069.741363

Points visited: 38
Minimum distance: 13731.809949

Program ended with exit code: 0

KMEANS

Visits = 37
Minimum distance = 100.452501

Visits = 39
Minimum distance = 102.946674

Visits = 41
Minimum distance = 112.527445

Visits = 47
Minimum distance = 105.827151

Visits = 46
Minimum distance = 99.545228

Visits = 47
Minimum distance = 110.490596

Visits = 45
Minimum distance = 103.850976

Visits = 38
Minimum distance = 121.288288

Visits = 42

Minimum distance = 106.827237

Visits = 39

Minimum distance = 105.460804

NOTE:

Number of visits in ascending order go in the order → LSH – KDTree – KMEANS

Approximation of nearest neighbor is in order → LSH – KMEANS – KDTree