Closest Pair Report

Andreas Bitzilis, Christos Grigoriou and Dimos Zikos

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Results

Our implementation produces the expected results on all input-output file pairs, except slotermeier-23-tsp.txt, where our code reports distance 2.531 as the shortest distance. This may be because of rounding errors, or differences between float and double on various machines.

The following table shows the closest pairs in the input files wc-instance-\*.txt. Here n denotes the number of points in the input, and (u, v) denotes a closest pair of points at distance d.

|  |  |  |  |
| --- | --- | --- | --- |
| n | u | v | d |
| 2 | 0 | 1 | 1 |
| … |  |  |  |

Implementation details

We resort by y-coordinates in each recursive step. For the comparison of points close to s in Sy we inspect 15 points, as explained (5.10) of Kleinberg and Tardos, Algorithm Design, Addison–Wesley 2008. Here is the corresponding part of our code:

min = [...]

for (s [...]

for [...]

if (x.distance(...) < min) [...]

Our running time is O(………) for n points.