Evolutionary Computation Lab VIII

Piotr Kaszubski 148283

Wednesday, December 27, 2023

Contents

1 Implementation details

For the ”best” similarity version, I used the best instances I ever obtained for each of the TSPA, TSPB, ...solutions. All of them came from the previous report:

TSPA – large-scale neighborhood search from greedy, with steepest local search after repair-destroy,

TSPB, **TSPC**, **TSPD** – large-scale neighborhood search from a random solution developed with steepest local search, with steepest local search after repair-destroy.

As you will see, these best solutions share very few edges with the ones obtained from random solutions after a single round of greedy local search. Since there was a lot of overlap on certain y-values, I added jitter to all plots.

2 Visualizations

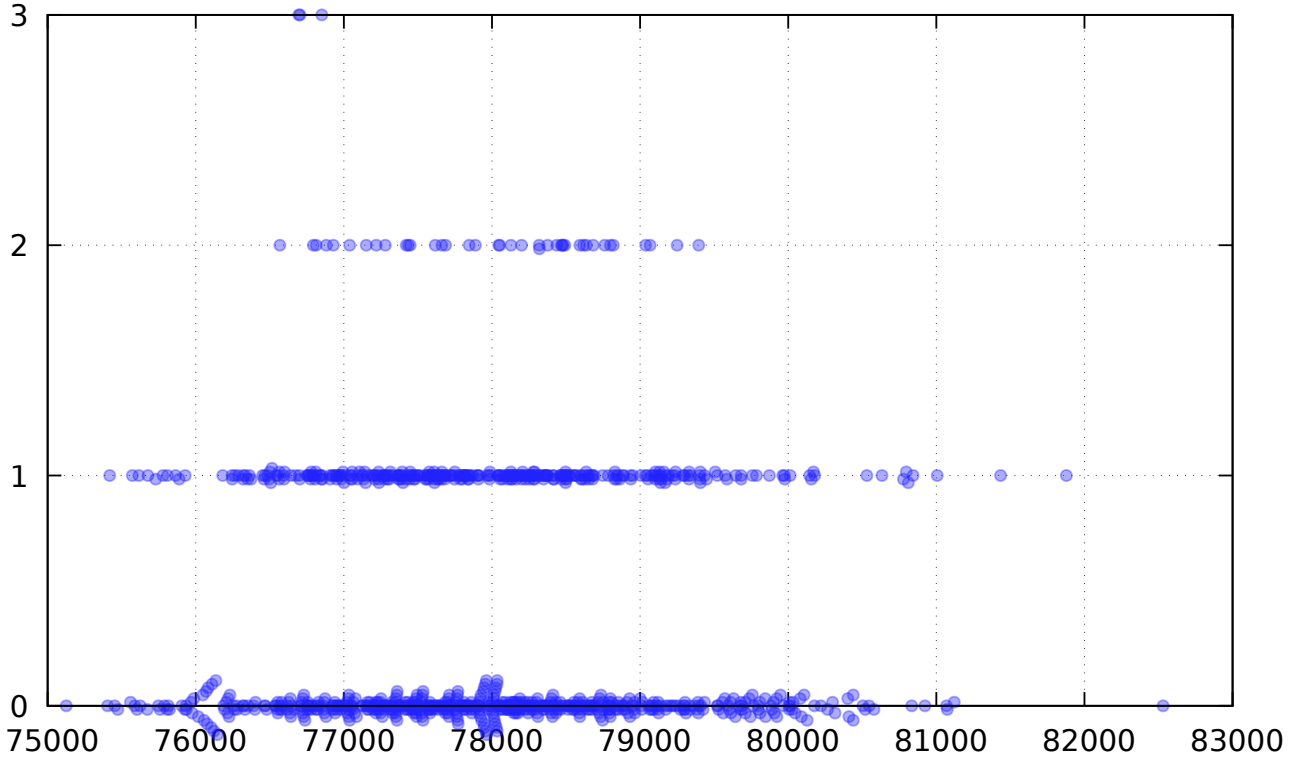

Figure 1: TSPA, edges, best

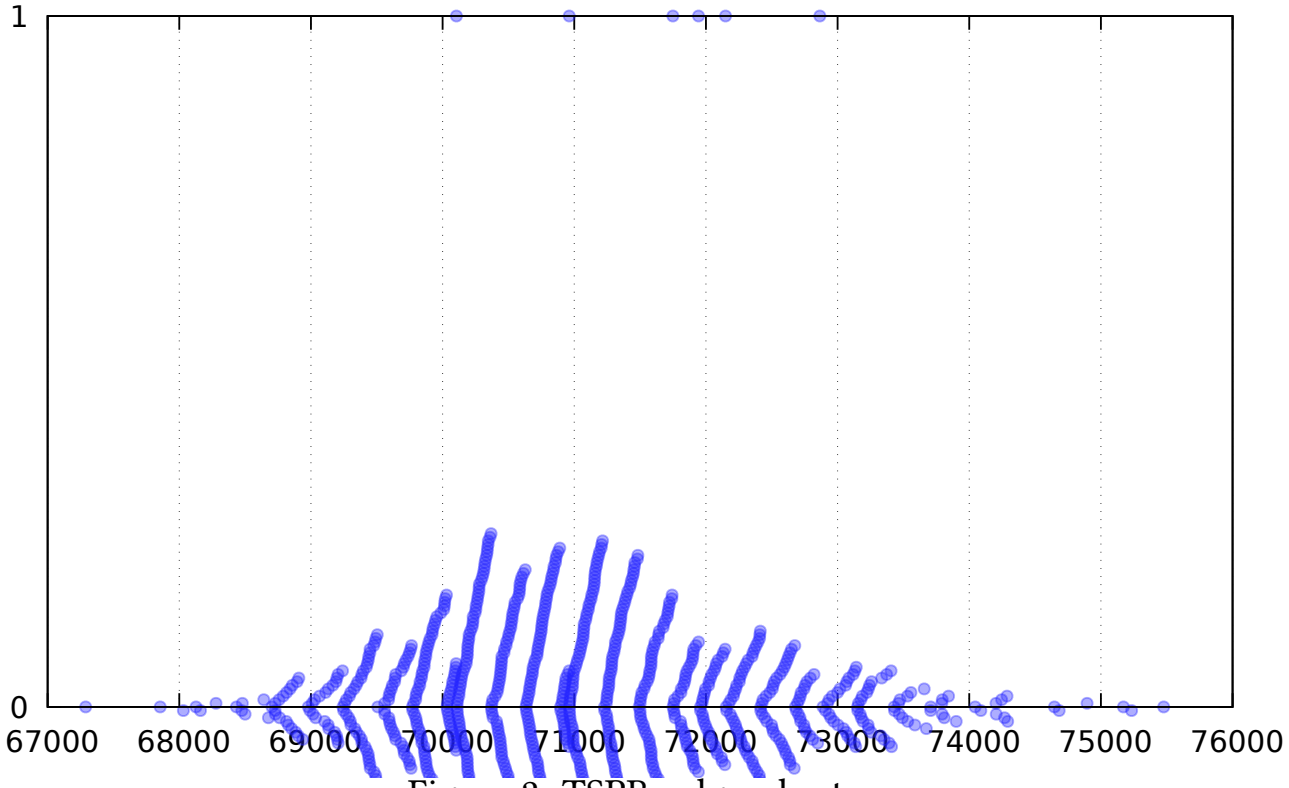

Figure 2: TSPB, edges, best

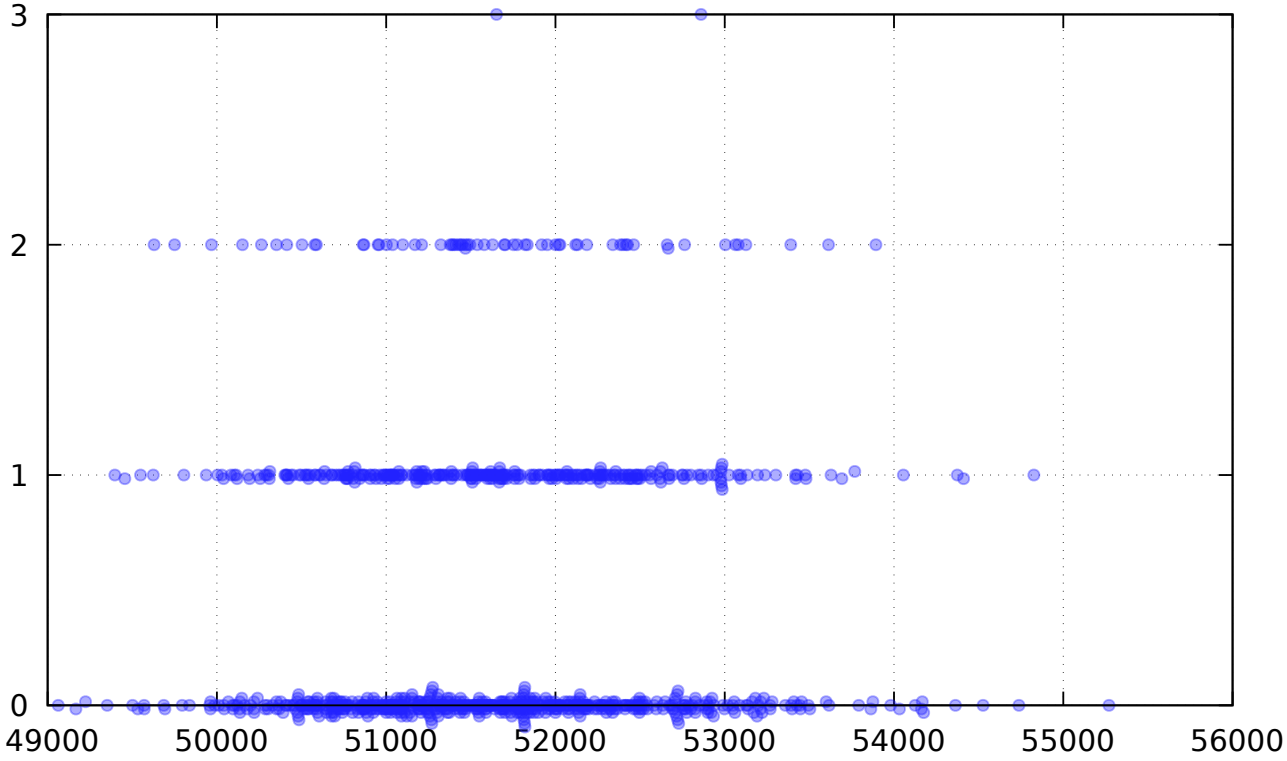

Figure 3: TSPC, edges, best

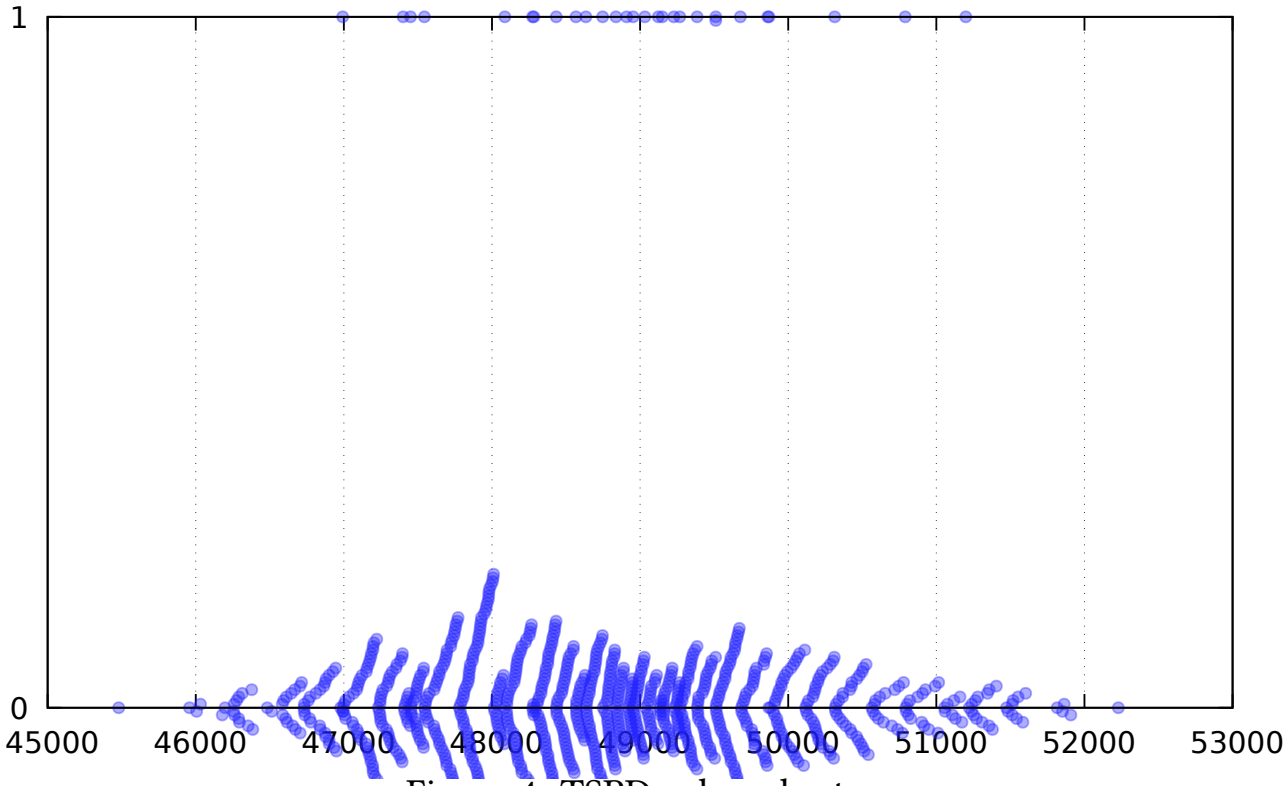

Figure 4: TSPD, edges, best

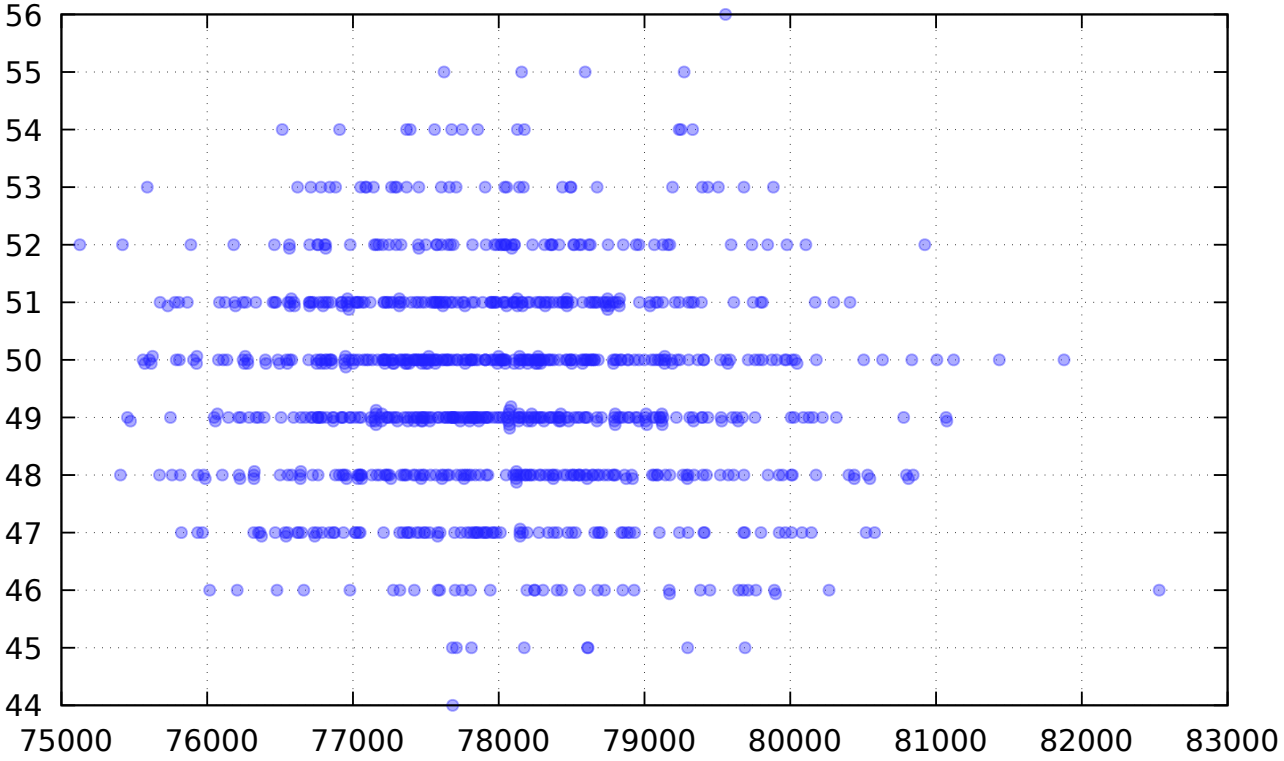

Figure 5: TSPA, nodes, best

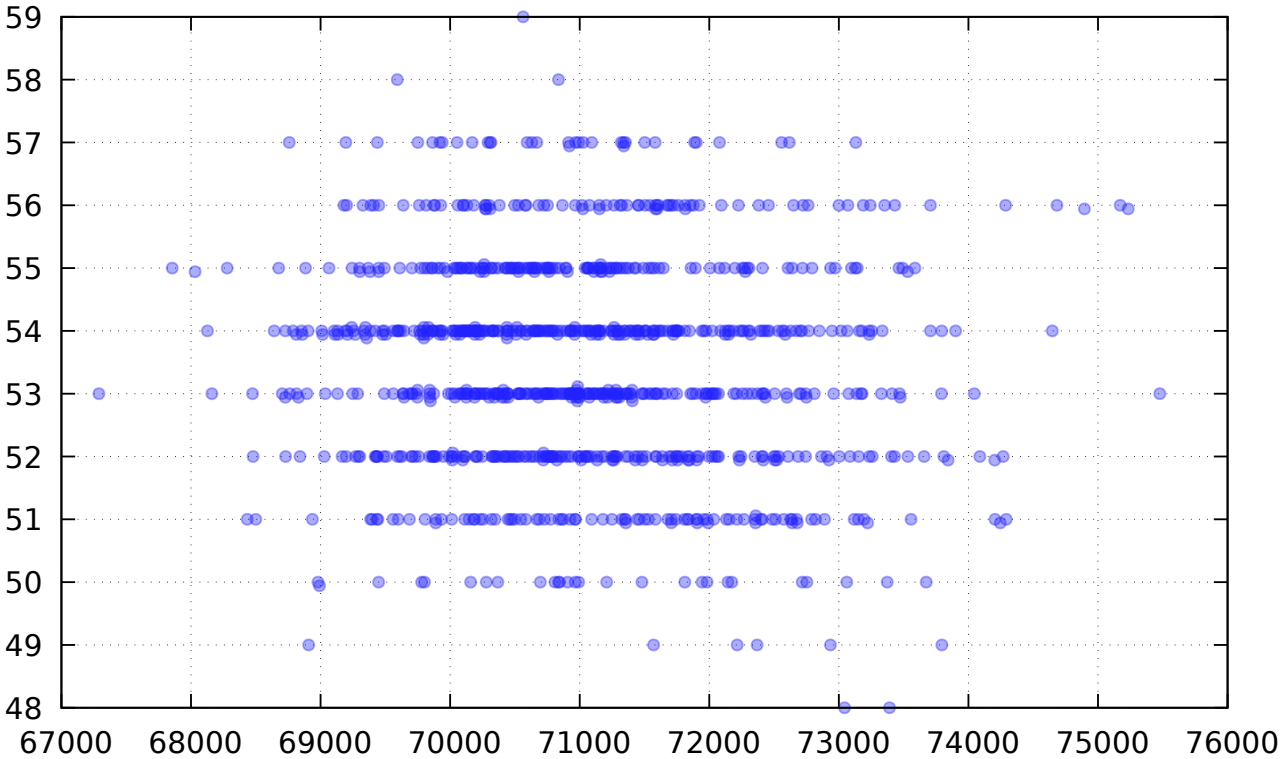

Figure 6: TSPB, nodes, best

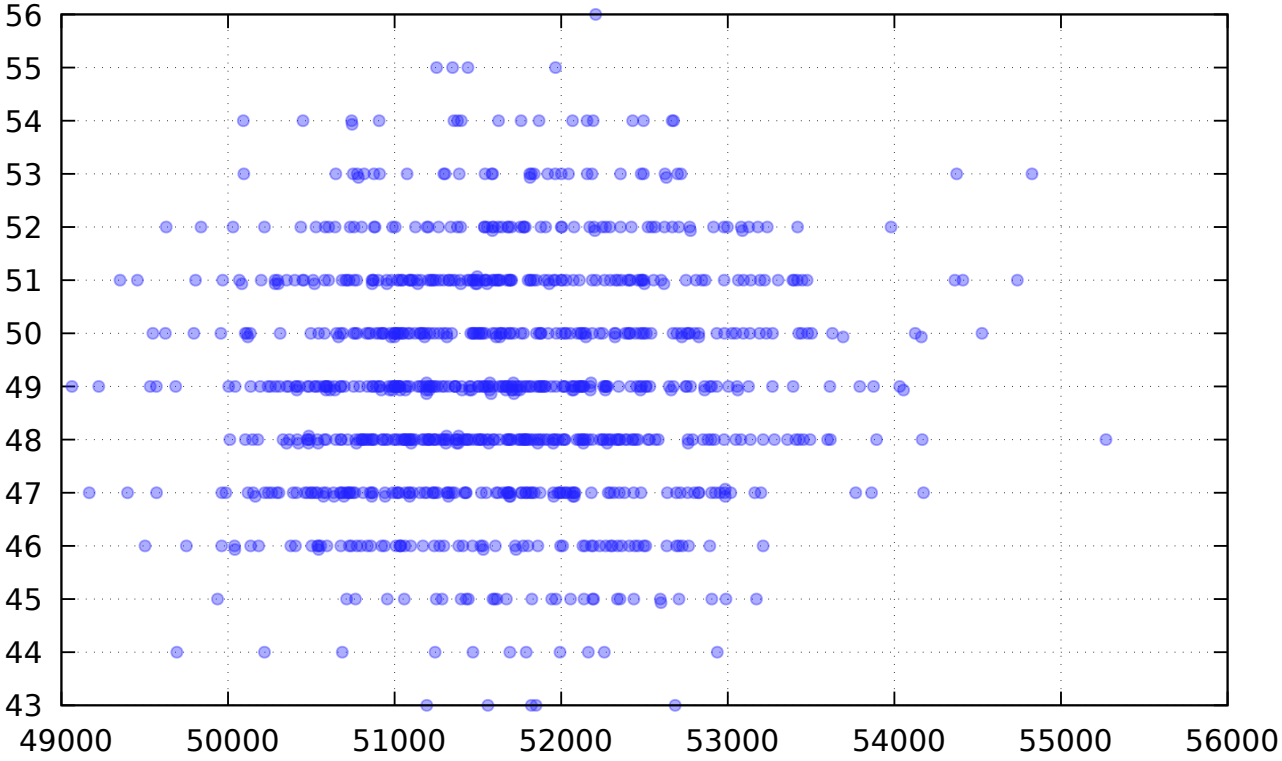

Figure 7: TSPC, nodes, best

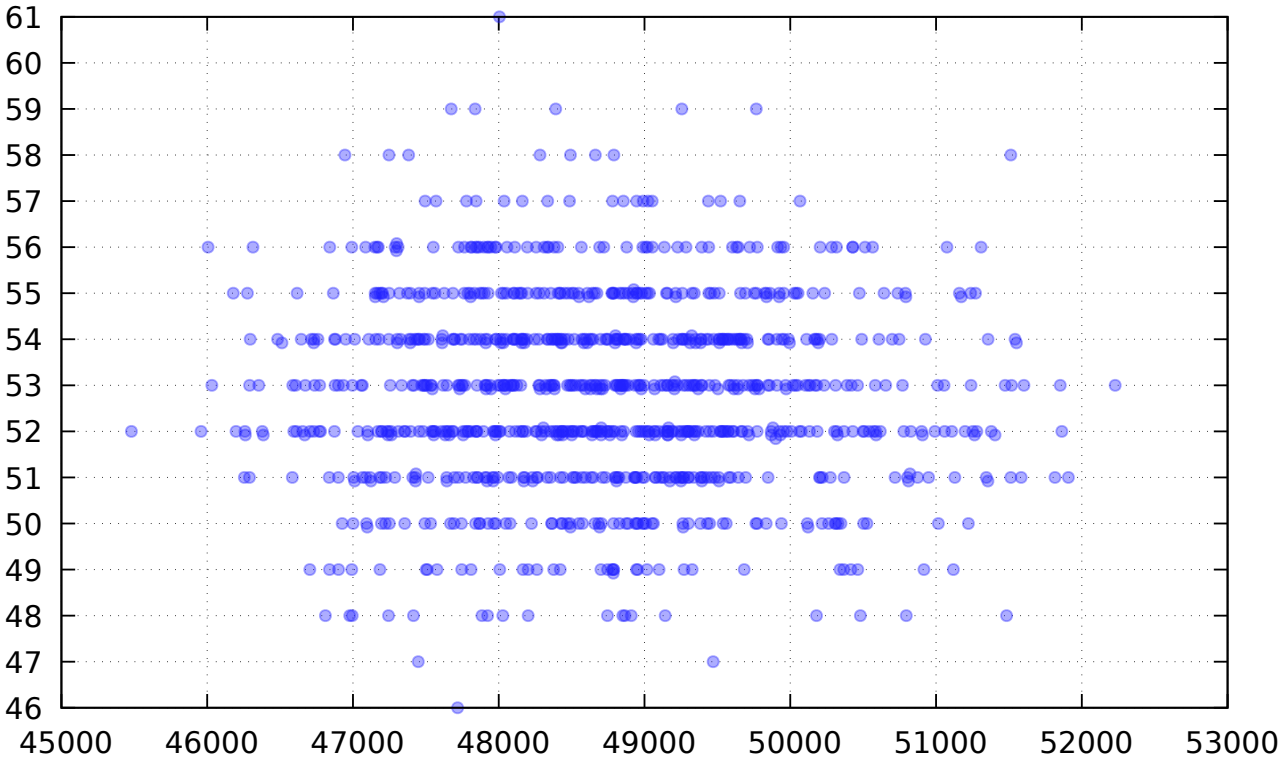

Figure 8: TSPD, nodes, best

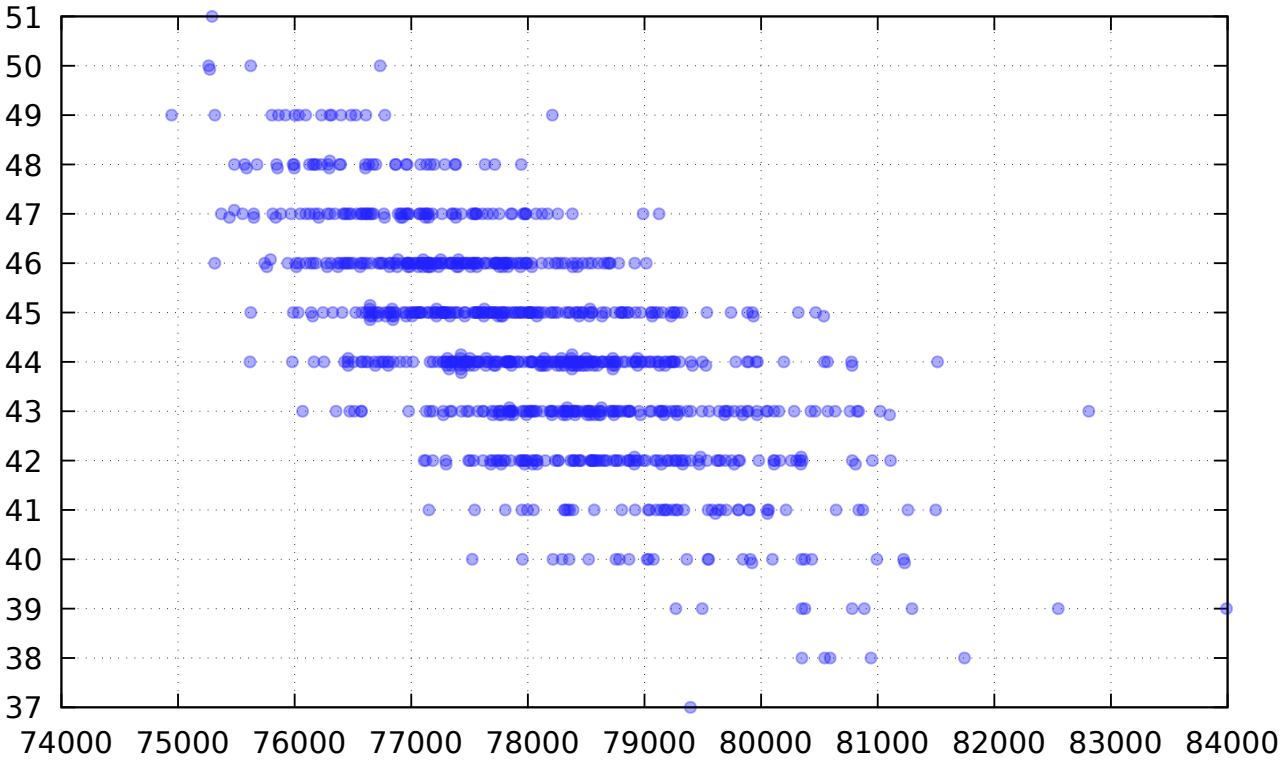

Figure 9: TSPA, edges, avg

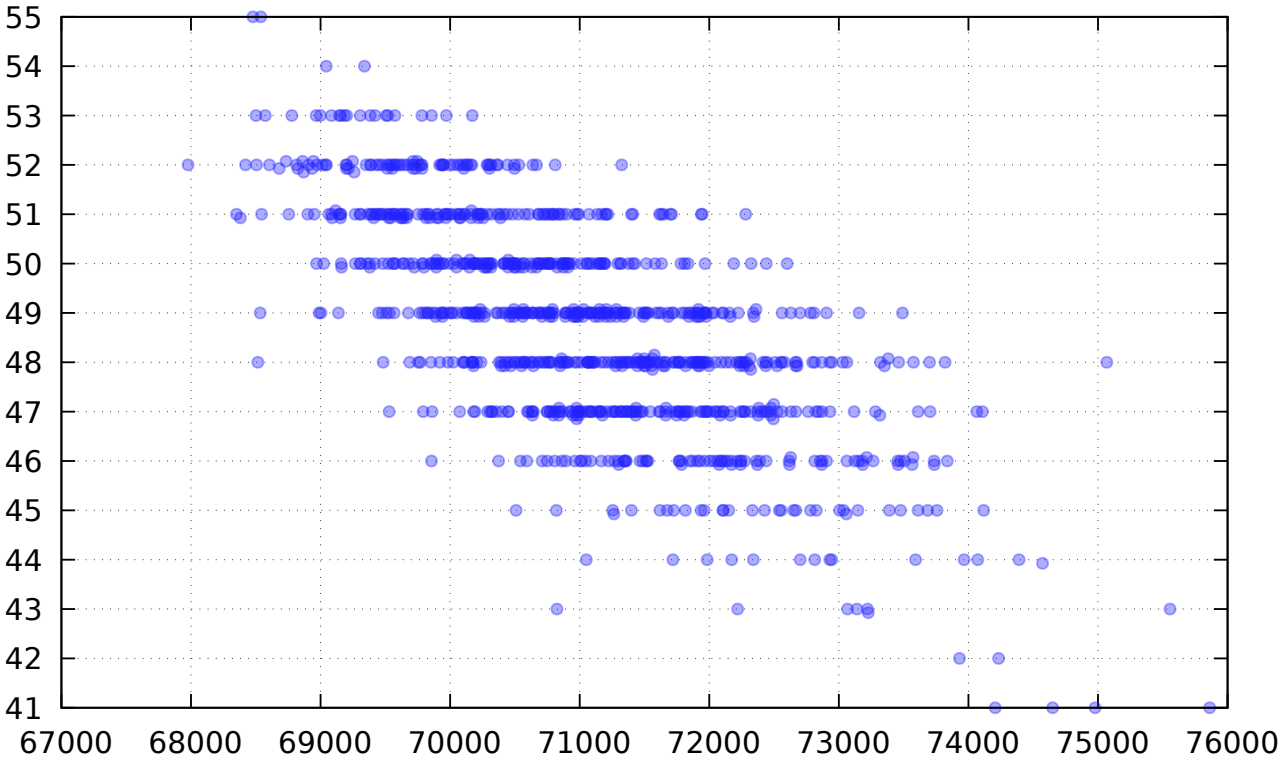

Figure 10: TSPB, edges, avg

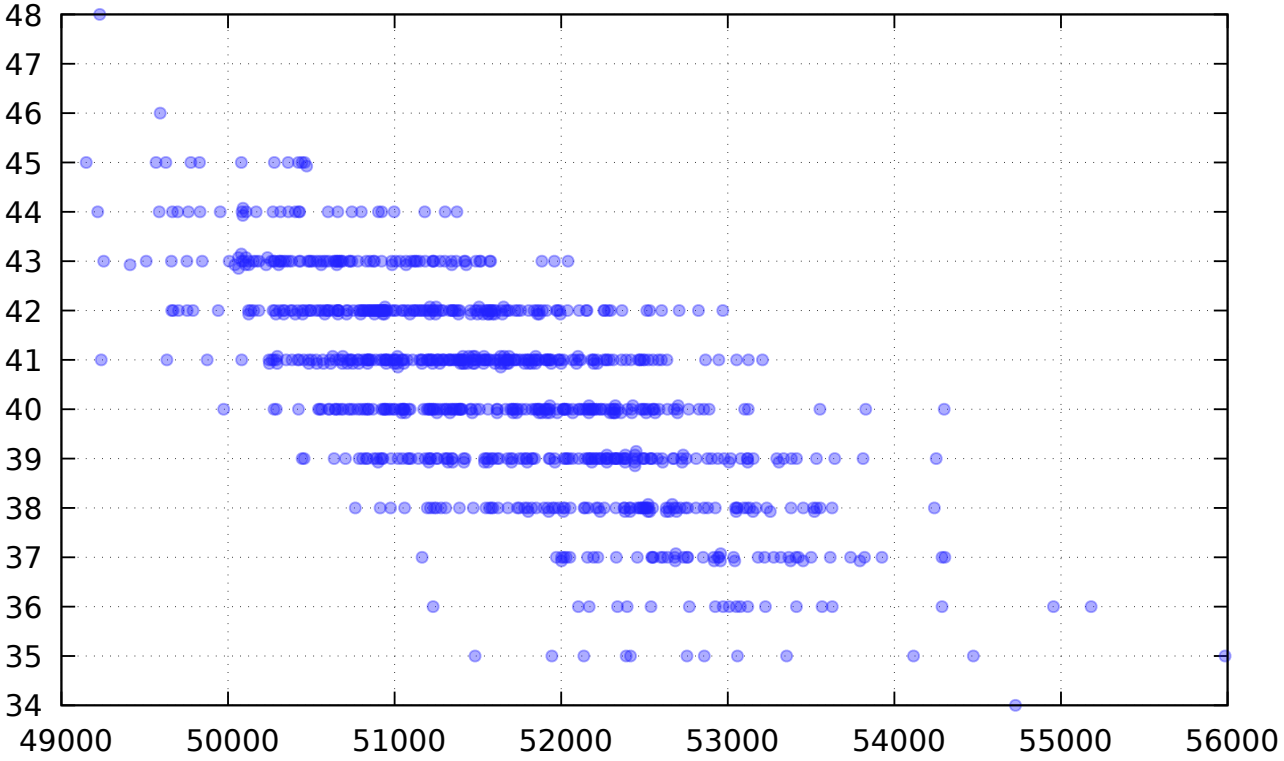

Figure 11: TSPC, edges, avg

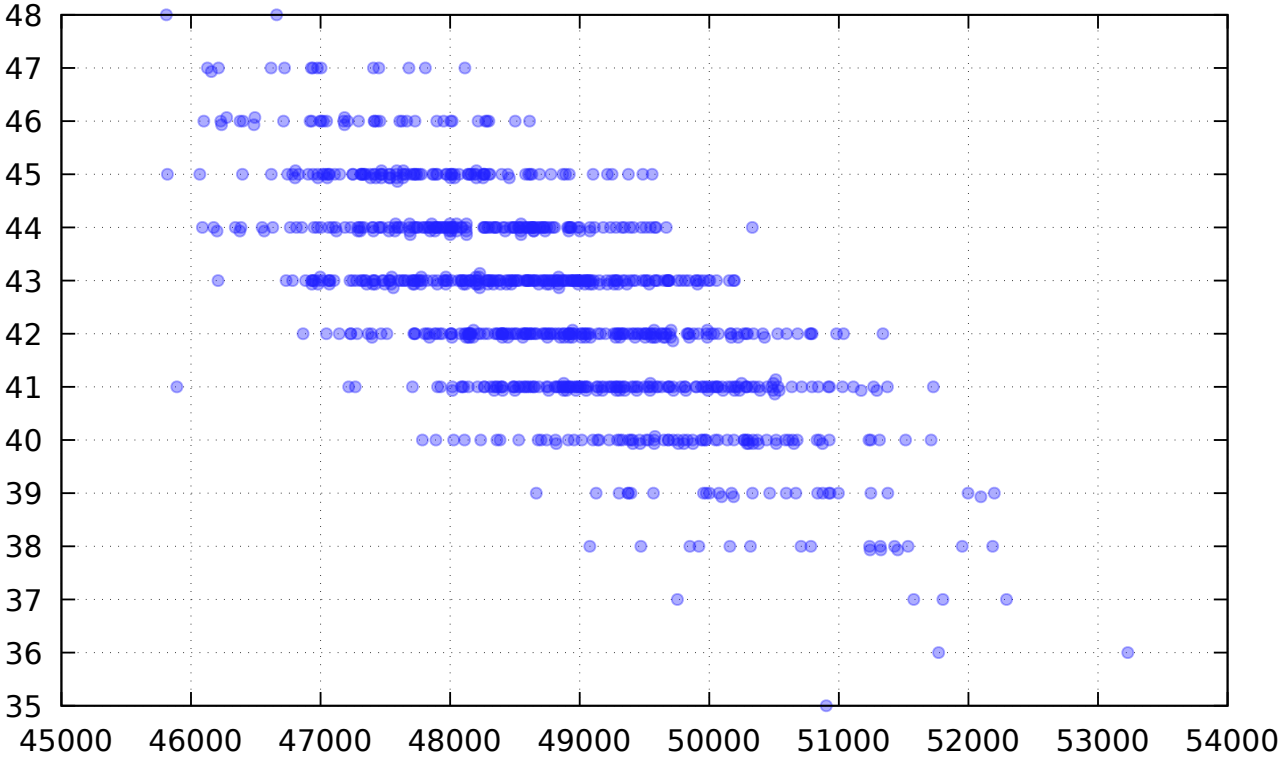

Figure 12: TSPD, edges, avg

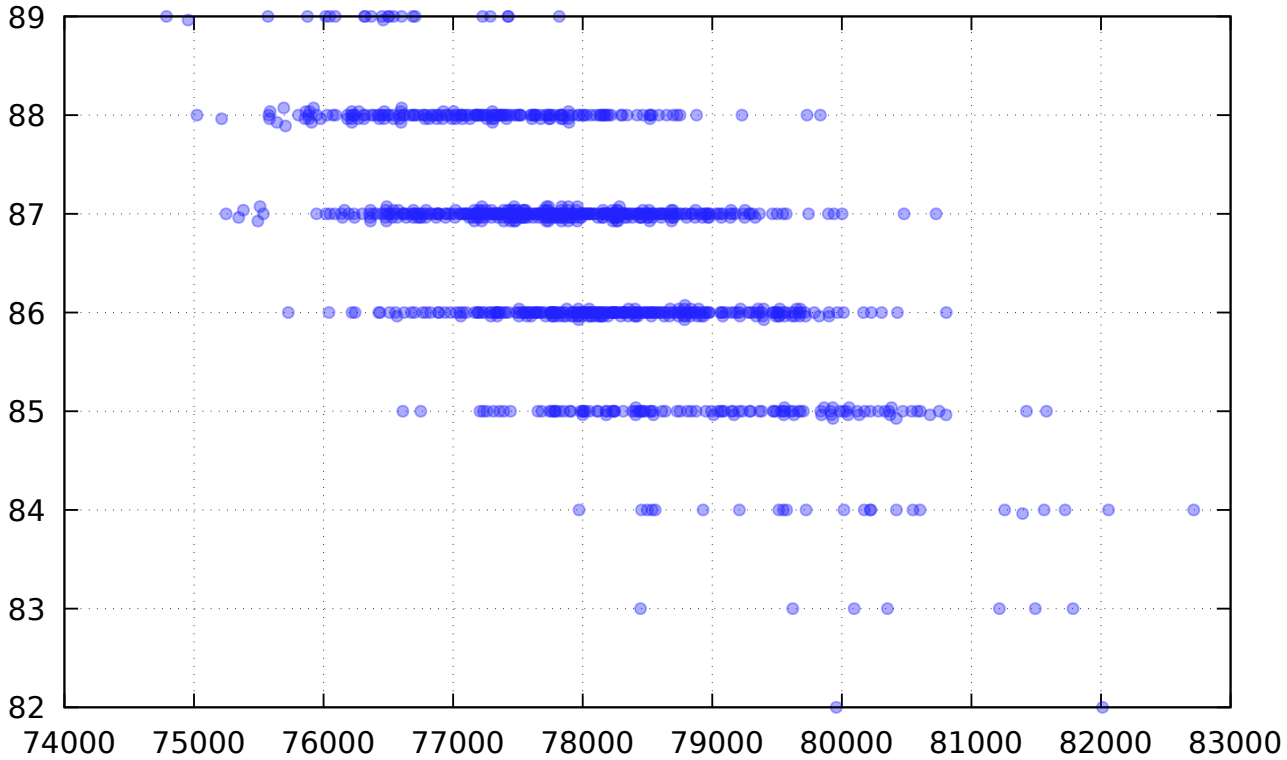

Figure 13: TSPA, nodes, avg

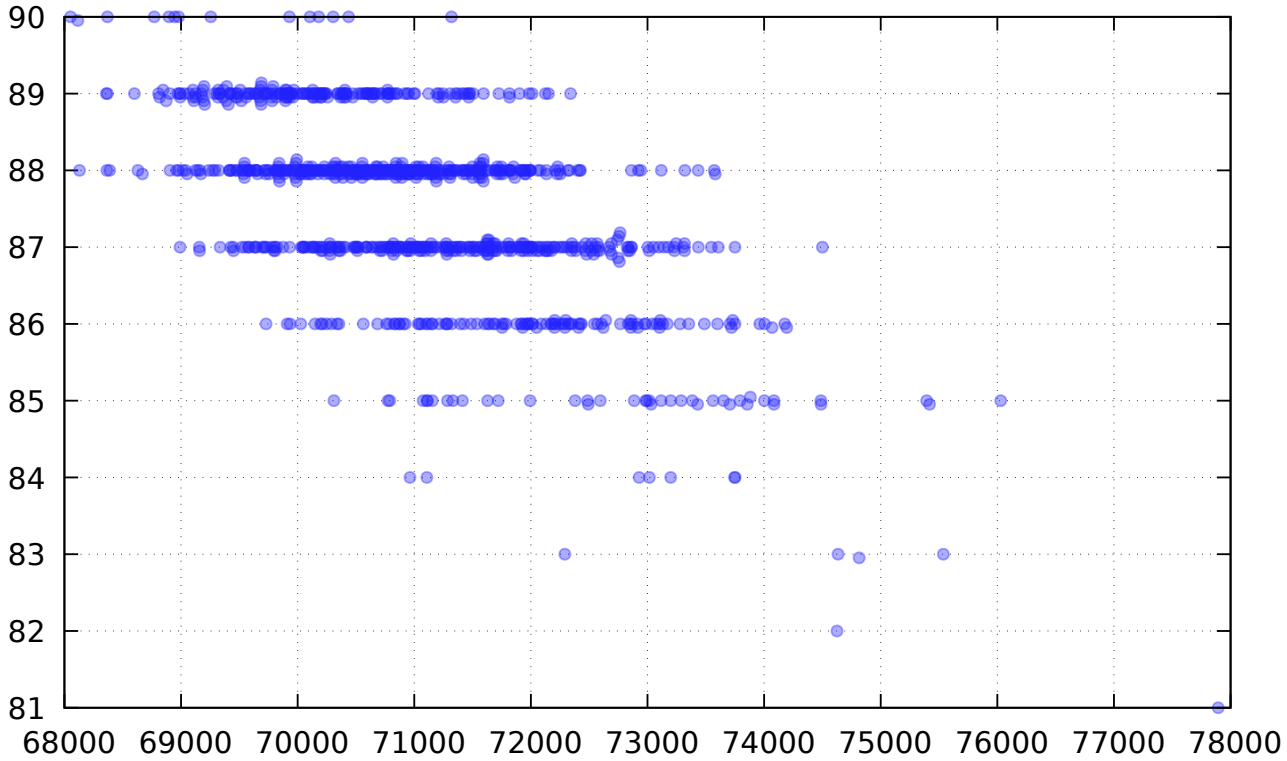

Figure 14: TSPB, nodes, avg

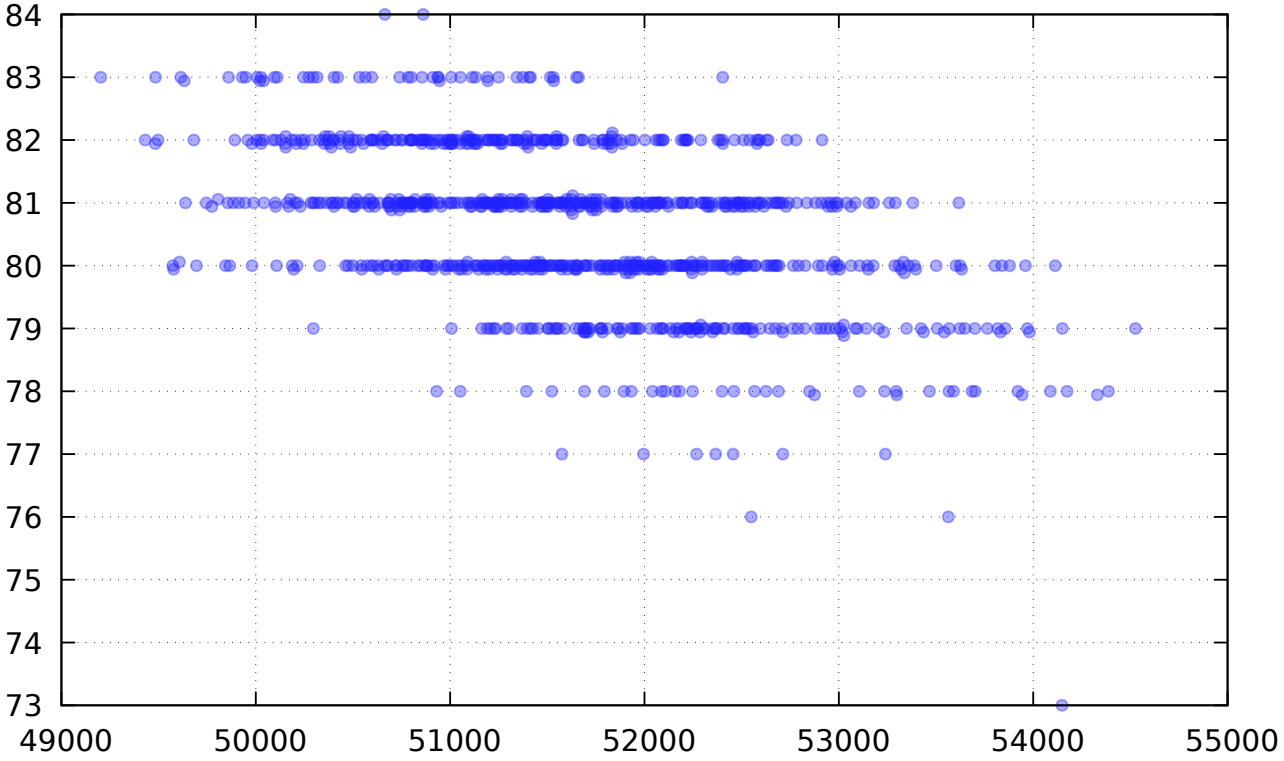

Figure 15: TSPC, nodes, avg

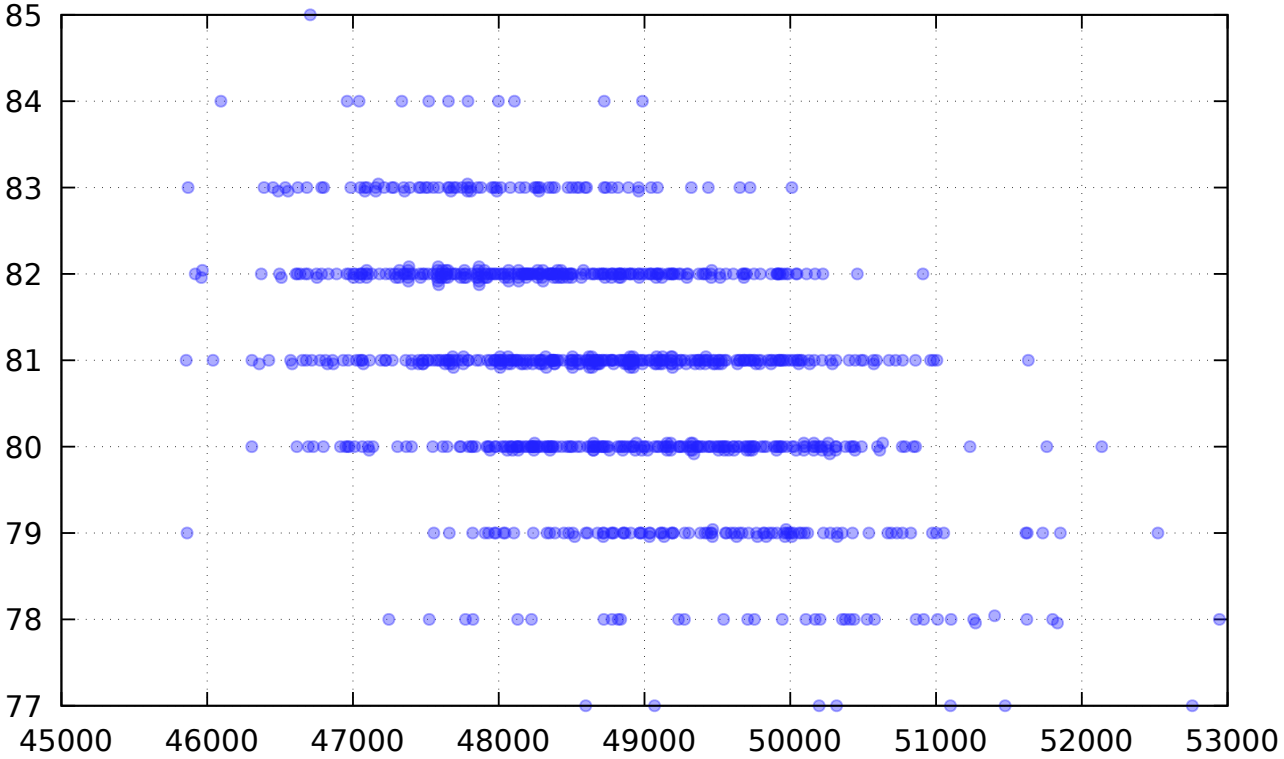

Figure 16: TSPD, nodes, avg

3 Source code

The source code for all the experiments and this report is hosted on GitHub: https://github.com/RoyalDonkey/put-ec-tasks

4 Conclusions

There is little to no edge similarity with the best solutions, as explained in Section 1. Interestingly, TSPA and TSPC consistently get 1-2 edges, while TSPB and TSPD almost exclusively get 0s. Node similarity with best solutions is random, which further solidifies that solutions made using different methods have almost nothing in common.

Edge similarity with average solutions displays a very nice trend – solutions which are better than average tend to be more similar to each other. This means that the same method applied 1000 times on average finds similar edges. The same occurs for nodes.