

Code Appendix

This appendix describes the code used in in the Applications section of “Myopia in dynamic spatial games” by Shane Auerbach and Rebekah Dix.

Constructing Oldenburg

The script `Construct_Oldenburg.m` uses `OLedges.txt` and `OLnodes.txt` to create an undirected graph that represents the transportation network of Oldenburg, Germany using data from Brinkhoff (2002). The file `OL.mat` contains the output of `Construct_Oldenburg.m`.

Simulations with Myopic Agents on Oldenburg

The script `Oldenburg_Spatial_Network_Simulation.m` can be used to simulate MBR agents on Oldenburg’s transportation network. This script uses the helper function `FunCountTerritories.m`. The file `Oldenburg_Allocations.mat` contains the particular sequence of spatial allocations discussed in the paper. To replicate the sequence of of spatial allocations, use the initial allocation of drivers in `Oldenburg_Allocations.mat`.

Oldenburg Figures

The script `Create_Oldenburg_Figures.m` creates the figures of Oldenburg’s transportation network with allocations of drivers used in this paper. The script plots the initial, final, and approximately optimal allocations of drivers in `Oldenburg_Allocations.mat` and `Oldenburg_Approx_Optimal.mat`.

Computing Approximately Optimal Spatial Allocations

The file `Greedy_Adjustment.m` uses a myopic (greedy) heuristic, as in Kuehn and Hamburger (1963), to compute an approximately optimal allocation of drivers on Oldenburg’s transportation network. The file `Oldenburg_Approx_Optimal.mat` contains the approximately optimal allocation of 60 drivers on Oldenburg’s transportation network.

References

Brinkhoff, T. (2002). A framework for generating network-based moving objects. *GeoInformatica*, 6(2):153–180.

Kuehn, A. A. and Hamburger, M. J. (1963). A heuristic program for locating warehouses.
Management science, 9(4):643–666.