Online Motion Planning
Problem Set 8
Universität Bonn, Institut für Informatik I

To be solved until the 20th of December

Problem 1:

Prove or disprove: The shortest path from s to t in a street polygon P has a constant competitive factor c for the exploration of P.

Problem 2:

Let S be the 8×8 grid polygon without holes. Suppose you are starting in the bottom-left corner and you can move in each turn to one of the cells in your 4-neighborhood at the cost of 1. Compute an optimal search path and its Search Ratio for this setting.

Problem 3:

Now suppose you are walking from vertex to vertex in the complete bipartite graph $K_{m,m}$ where each edge traversal costs 1. How does an optimal search path look like and what is its Search Ratio?